
Prospective Closure of the Diablo Canyon Nuclear Power Plant



Economic Impact Assessment

Prepared for:
The Energy Division
California Public Utilities Commission

David Wells Roland-Holst, Drew Behnke, Samuel Evans, Liam Frölund, Annie Yi-Chen
Department of Agricultural and Resource Economics
UC Berkeley

www.bearecon.com

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California Public Utilities Commission

Energy Division

505 Van Ness Avenue

San Francisco, CA 94102

<https://www.cpuc.ca.gov/energy/>

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Executive Summary

On September 26, 2016, Governor Jerry Brown signed Senate Bill (SB) 968 which adds Section 712.5 to the Public Utilities Code, requiring the California Public Utilities Commission (CPUC) to facilitate an economic impact assessment of the “adverse and beneficial economic impacts, and the net economic effects, for the County of San Luis Obispo and the surrounding regions, that could occur if the [Diablo Canyon Nuclear Power Plant] were to temporarily or permanently shut down....” As ordered in SB 968, the CPUC searched for an “independent third party” to conduct the economic impact assessment, and ultimately hired researchers at UC Berkeley for that role. This study is that economic impact assessment.

On January 16, 2018, the CPUC issued Decision (D.)18-01-022, approving Pacific Gas and Electric Company’s (PG&E) proposal to retire Units 1 and 2 of the Diablo Canyon Power Plant (DCPP) by 2024 and 2025 respectively, and authorizing up to \$211.3 million for DCPP employee retention programs. On September 19, 2018, Governor Brown signed SB 1090 which approved an additional \$85 million to pay for community impact mitigation programs in the San Luis Obispo region, and another \$140.8 million for DCPP employee retention. The CPUC enacted the rate changes ordered in SB 1090 when it issued D.18-11-024 on December 7, 2018. Collectively, D.18-01-022, SB 1090, and D.18-11-024, authorized up to \$352.1 million for DCPP employee retention programs, and \$85 million for community impact mitigation programs.

Currently, DCPP, which employs about 1,500 PG&E workers, is the second largest employer in SLO and provides a large economic base to the area that could be lost with the closure of DCPP. This study is intended to help identify potential ways for state and local jurisdictions to mitigate any adverse economic impacts and plan accordingly. Economic impacts were evaluated for DCPP closure, including shutdown of operations, actions necessary to safely retire the plant and make the site eligible for alternative use, and the implementation of SB 1090 which is a special assistance measure to offset adjustment costs for the SLO community. This document presents the five main parts of this assessment: 1) general economic impact assessment; 2) local stakeholder consultation; 3) local stakeholder survey; 4) real estate market assessment; and 5) bond market assessment. The following section summarizes the approach and findings of each component.

ES 1 - Economic and Fiscal Impact Assessments

ES 1.1 Approach

The overall impact of DCPP closure on the SLO economy was the primary concern for those interested in this assessment, and most of our effort was devoted to this component. To estimate the local economic and fiscal effects of DCPP closure, as well as associated spending from decommissioning, D.18-01-022, and SB 1090, we utilized a regional input-output model called IMPLAN that estimates impacts through industry-specific changes in economic activity. The IMPLAN system offers the most detailed data available on the structure of the local, regional, and state economy, and it effectively supported our efforts to identify and evaluate the appropriate scenarios to reflect closure and decommissioning of DCPP. In this context three component effects had to be considered:

- Positive effects to the regional economy from the associated spending of SB 1090.
- Negative effects from the loss of local income (or associated expenditures), jobs, and tax revenues when DCPP closes.
- Positive effects from the variety expenditures associated with decommissioning to ensure safe closure of the facility.

Additionally, two timing considerations had to be taken into account: 1) when the expected positive and negative impacts will occur and 2) how long they can be expected to persist. Spending associated with SB 1090 will occur *before* the closure of DCPP and thus these economic impacts should be assessed separately from the impacts upon DCPP closure.

In summary, the relevant economic scenario inputs into our model were the following:

- **Impact 1: SB1090 and D.18-01-022 – Positive Shock (Pre-Closure)**
 - \$363.4 million for employee retention and retraining.
 - \$352.1 million for retention.
 - Payments vary across 7 years.
 - \$85 million for community impact mitigation settlement.
 - \$75 million for “Essential Services Mitigation Fund” (ESMF).
 - Spent evenly across 7 years.
 - \$10 million for “Economic Development Fund” (EDF).
 - One-time payment.

- **Impact 2: DCPP Closure – Negative Shock (Post-Closure)**
 - \$226 million for payroll.
 - 1,396 local employees.
 - \$374 million in expenditures for goods and services.
 - \$26.5 million unitary property tax.
- **Impact 3: DCPP Decommissioning Expenditures – Positive Shock (Post-Closure)**
 - \$4.8 billion, allocated over 10 years.
 - \$1.44 billion for waste management and remediation.
 - \$1.07 billion for utilities.
 - \$959 million for construction of other new nonresidential structures.
 - \$666 million for architectural, engineering, and related services.
 - \$401 million for investigation and security services.
 - \$227 million in other categories.

ES 1.2 Results

Our research recognizes that plant closure, decommissioning, and SB 1090 assistance will present the SLO economy with both positive and negative economic impacts. Taken together, we find that the net effect of these factors will be much smaller than previous estimates for DCPP closure. Plant closure will induce short term reductions in local employment and expenditures associated with the cessation of electricity production. This negative outcome is expected to decrease local economic activity by some \$801 million annually in San Luis Obispo County. On the other hand, DCPP will not close in a vacuum: the plant will not immediately shut down, nor will all employees immediately leave the region. Although we are not able to estimate the total number of employees expected to stay beyond active duty at the plant, we can assume our estimate sets a conservative lower bound on the expected overall negative economic impact. Furthermore, there are positive economic impacts to consider both before and after the plant closes. Before the plant closes, funding from SB 1090 will offer significant stimulus to the SLO economy, which will see aggregate economic output increase by at least \$40 million annually for the seven years preceding closure, with output rising to \$53 million when the Economic Development Fund (EDF) is capitalized. After the plant closes and the bulk of decommissioning expenditures begin, we estimate that local output can be expected to increase by roughly \$724 million. The salient macroeconomic impacts we estimate for San Luis Obispo County are summarized below:

- **Impact 1: SB1090 and D.18-01-022 – Positive Shock (Pre-Closure)**
 - Increase in economic output of \$40.1 million per year for seven years, with a supplemental \$13 million increase for one year when EDF funds are capitalized.

- Increase in approximately 349 FTE jobs annually for seven years. EDF adds an additional 87 FTE jobs when funds are capitalized.
- **Impact 2: DCPP Closure – Negative Shock (Post-Closure)**
 - Decrease in economic output of \$801 million. The majority of losses occur as direct effects within the nuclear sector with a \$600 million reduction in output.
 - Decrease of approximately 2,908 FTE jobs, the majority of which are from direct employment from DCPP.
- **Impact 3: DCPP Decommissioning Expenditures – Positive Shock (Post-Closure)**
 - Increase in economic output of \$724 million per year for ten years.
 - Increase of approximately 4,934 FTE jobs annually for ten years.

Thus, our overall assessment indicates a much smaller net impact on the SLO economy, than previous estimates for DCPP closure. Previous studies have only considered the negative shocks, whereas we take account of how decommissioning expenditures will substantially offset economic losses attributable to plant closure. Assuming that decommissioning expenditures are distributed evenly across ten years, we find a net economic loss of roughly \$77 million annually. This impact is far less than previous estimates which placed losses closer to \$1 billion per year. It is also important to place the size of any DCPP impact in context of the size and growth of San Luis Obispo's regional economy. Although DCPP closure will result in meaningful economic losses, overall economic growth in the region will still be positive, although perhaps at a lower rate. For example, our estimate of \$77 million reductions in economic activity correspond to approximately 0.58% of annual gross regional product, well below historical growth rates.

ES 2 - Local Stakeholder Consultation

ES 2.1 Approach

At the request of the CPUC, UC Berkeley engaged nine key stakeholders to discuss issues they identified as important related to the closure of DCPP. Topics considered included fiscal impacts, economic expenditure impacts, ability to adapt, and other economic and financial factors of special concern to local stakeholders on the context of DCPP closure. These discussions were conducted during two visits by the UC Berkeley team, on September 21st, 2018 and October 12th, 2018.

ES 2.2 Results

Based on these discussions the following themes emerged:

- **Fiscal challenges for county and city managers:** The key fiscal concern is the loss of tax revenue from the unitary property tax paid by PG&E on the land and assets at DCPP. SB 1090 helps alleviate some of the concern in the short-run (pre-closure) but concerns certainly remain about the fiscal gap post-closure. The concern was most pronounced for the county government although in-depth fiscal planning has already begun.
- **Local Community Expenditure Concerns:** With the DCPP closure and associated loss of a number of high-income jobs, there is likely to be a reduction in discretionary spending in the surrounding community. What will be the impact on the single high-end grocer and/or the mid-tier to high-tier restaurants? Given how small the community is, there are concerns that the loss of revenue for the specialty business could have an outsized impact on it. These concerns are not just related to full-time DCPP employees but to the influx of seasonal employees who come during the scheduled refueling outages. These employees typically come during the tourism offseason and are an important source of spending during the slower season.
- **Perceptions of regional variation in ability to adapt to the closure:** The average household income for San Luis Obispo County is approximately \$65,000 and the average salary for a DCPP employee is approximately \$150,000. These DCPP workers are quite spread out across the county in terms of where they live. There is concern in certain regions (north county in particular) that losing these residents will have a large negative expenditure effect in smaller communities. In the city of SLO, this seemed to be less of a concern because the economy is much more diversified and less reliant on these DCPP employees.
- **Discussion of how to adapt the local economy post-closure:** The point was made several times that employment in the county of San Luis Obispo is largely supported by government agencies and DCPP. Several stakeholders expressed concern about the loss of the high-income earners currently employed at DCPP. There is a feeling that new economic development opportunities must be aggressively pursued in order to diversify the economy and attract new businesses, particularly ones that support a high-skilled labor force. 90% of Cal Poly graduates leave the area because there is no demand in the local labor market.
- **Housing crisis and affordability gap:** The affordability gap between average household income and the rising cost of housing is clearly a concern. Permitting for new residential construction can be restrictive and several stakeholders felt that this would be a critical barrier to diversifying the economy post-closure. Little concern was expressed that DCPP would have any impact on the housing crisis.

Much like the rest of California, the SLO area is in a housing crisis, with rising home prices unaffordable to much of the population. There has been an influx of capital from greater Los Angeles and the Bay Area either as investments or retirees. With restrictive zoning, NIMBYism, and expensive land costs, there is limited new home construction. The city of SLO has several new developments of single-family homes, but these are in the \$700k-\$800k range and are targeted at out-of-region capital. Those who work in the service sector or government are unable to afford homes, and the closure of DCPP will not affect this. SLO county is a middle-income county with upper-middle income home prices. Therefore, although the SLO unified school district is losing an important source of tax when DCPP closes, the district is more concerned about declining student enrollment and recruiting staff than the loss of tax revenue. Given the expensive housing market and lack of high-income jobs, they have seen families leave the city, and new families hesitant (or unable to move in). Furthermore, hiring and retaining staff remains a challenge.

- **The Impact to community not reflected in economic numbers:** There was significant concern about who DCPP employees are and what they mean for the local community. DCPP employees hold head of household jobs that cannot be easily replaced with service sector or government jobs. DCPP employees are those who donate to local schools, volunteer, or serve in other leadership roles. Will the fabric of the community, especially in bedroom communities, start to disappear as the DCPP jobs leave?

ES 3 - Local Stakeholder Survey

ES 3.1 Approach

To ascertain local community perceptions of the economic implications of DCPP closure, we conducted an online survey of a randomized sample of SLO stakeholders. The results of this survey represent a diverse population and reflect a resilient community sentiment on SLO economic issues generally and DCPP closure in particular.

ES 3.2 Results

DCPP closure has stimulated local policy dialog, including both programmatic initiatives spontaneous discussions in private venues and the media. While these channels have enabled important stakeholder engagement, we wanted to assess local concerns and perceptions in a more inclusive manner. To do this, we conducted an online survey of opinions across a randomized sample of SLO enterprises, non-governmental organizations (NGOs), and public institutions (including government and education).

Because of time and other resource constraints, our anonymous sample, assembled by Dunn and Bradstreet, did not include households.¹

A number of salient findings emerged from this exercise, focused on overall economic sentiment and expected impacts of DCPP closure. First of all, the present survey offers relatively clear indications of general optimism regarding recent experience and expectations about SLO's local economy. There is also significant agreement about systemic sources of risk and uncertainty, especially as these relate to the cost of living. While these need to be taken seriously, they reflect broader concerns in California's more prosperous coastal communities.

For example, twice the number of SLO enterprises reported business expansion in the last 1-5 years as those who reported contraction. Majorities of all three stakeholder groups (Table ES 1) agreed with the statement that "San Luis Obispo County has a robust, vibrant economy." This optimism was tempered, however, with expressions of concern regarding growth challenges. Among the sentiment questions, all three stakeholders strongly agreed that "San Luis Obispo County suffers from a persistent 'affordability gap' between wages and housing costs." Similarly, the stakeholders all believed that housing prices were a primary culprit in this category, and probably also contributed to concerns about local recruitment ("Marketing to and attraction of job candidates is a persistent challenge in the county."). One of the most interesting sentiment questions saw answers diverge noticeably between Enterprises/NGOs on one side, and public institutions on the other: while all three groups returned majorities who accepted the assertion that "[e]conomic anchors like DCPP or CalPoly benefit the economy, but also allow county residents to be complacent about long-term challenges to promote economic growth and diversification[,]". NGOs were most prone to agree with this notion of status quo dependence, Enterprises less so, and the public sector least of all. Conversely, it might be reasonable to expect initiative for economic renewal to arise from the groups with comparable degrees of enthusiasm.

¹ We strongly believe, however, that a separate household survey would be very useful, both to assess current sentiment and to support development of more inclusive transition policies.

**Table ES 1: Percent of the Sample in Agreement with Each Statement,
by Stakeholder Group**

Statement	Percent in Agreement		
	Business	NGO	PubAdm
"San Luis Obispo County has a robust, vibrant economy."	50%	53%	58%
"Housing prices are having a negative impact on the local economy."	75%	87%	80%
"Marketing to and attraction of job candidates is a persistent challenge in the county."	81%	80%	72%
"Economic anchors like DCPP or CalPoly benefit the economy, but also allow county residents to be complacent about long-term challenges to promote economic growth and diversification."	71%	80%	63%
"San Luis Obispo County suffers from a persistent 'affordability gap' between wages and housing costs."	94%	93%	90%

Not only the most relevant, but perhaps the most important findings for our assessment relate to DCPP closure and the sentiments it arouses. In particular, we saw clear and significant disparities between public and private sector expectations regarding closure impacts, but remarkable agreement about what challenges are most important to overall progress for the local economy. Enterprises, NGOs, and Public Agencies generally agree on the most important SLO risks that are subject to economic uncertainty. These results, discordant expectations over shared values, make a compelling case for determined and expanded commitments to ongoing policy dialog. We already know that SLO public and private institutions are pursuing this with dedicated (SB 1090) and other funds, including the new Hourglass Project. We can only hope the evidence presented here will support more robust and constructive engagement to mobilize local institutions.

An unintended but essential benefit of DCPP closure could be a new generation of multi-stakeholder commitment to sustainable and inclusive growth across the SLO economy. Shared values will provide welcome cohesion, while discordant expectations can stimulate constructive discourse, develop more evidence, and motivate the community to improve mutual awareness. To facilitate this, our survey also sought to identify leading concerns and opinions about DCPP. These hallmark issues could be used to jump start and sustain a forward-looking dialog for community strategic planning.

ES 4 - Real Estate Market Assessment

ES 4.1 Approach

The impact of the DCPP closure on real estate values has been a frequently expressed concern across the spectrum of both SLO public and private stakeholders. To elucidate the significance of this risk, we made use of a newly-available database of historical housing data from Zillow. Using this highly disaggregated and timely data, we constructed a profile of the housing market in San Luis Obispo County over recent decades, using it to econometrically assess the impact of the DCPP closure announcement on local housing prices. For comparison, we also looked at the closure of San Onofre Nuclear Generating Station (SONGS) and a few other cases.

ES 4.2 Results

SLO County's housing market has largely recovered from the adverse macro cycle of 2008, with local housing prices sustaining steady upward trends over the last decade. Our event study of the DCPP closure announcement effect found no statistically significant impact associated with local housing prices. Similarly, in the area around SONGS, San Diego and Orange Counties, we found no statistically significant impacts associating real estate prices with the announcement or implementation of plant closure.

ES 5 - Bond Market Assessment

ES 5.1 Approach

Like real estate values, fiscal sufficiency has been a frequently expressed concern in the DCPP closure policy dialog, especially by public sector stakeholders. In our detailed economic impact assessment (component 1 above), we estimated the direct, indirect, and induced revenue implications of the main DCPP closure effects and found these to be modest relative to many expectations. While all revenue categories are not equally affected, these are significantly offset by economic stimulus from decommissioning, and SB 1090 provisions.

Of perhaps even greater significance for SLO public finance, however, is the cost of capital for local public entities. In times when economic sentiments about a regional economy turn negative, bond markets usually send a clear signal by pricing such risk into higher bond rates. The effects of this on overall budgets can often be much greater than the loss of individual revenue sources. To ascertain the significance of this for SLO and

DCPP, we used high frequency financial sector data to statistically assess DCPP announcement effects on local bond prices.

ES 5.2 Results

Despite applying advanced econometric tools to high quality public financial data, we were unable to identify any statistically significant “announcement effect” attributable to DCPP closure. We take this result as indicating that financial markets do not anticipate lasting adverse impacts on the overall SLO economy.

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Abbreviations

BEAR - Berkeley Economic Advising and Research
CAISO - California Independent System Operator
CARB - California Air Resources Board
CEC - California Energy Commission
CED - California Energy Demand Forecast
CHP - Combined Heat and Power
CPUC - California Public Utilities Commission
DCPP - Diablo Canyon Power Plant
DR - Demand Response
EV - Electric Vehicle
GHG - Greenhouse Gases
IOU - Investor Owned Utility
LCR - Local Capacity Requirement
LSE - Load Serving Entity
LTTPP - Long Term Procurement Plan
PG&E - Pacific Gas and Electric
POU - Publicly Owned Utility
PV - Photovoltaic
RPS - Renewables Portfolio Standard
SCE - Southern California Edison
SDG&E - San Diego Gas & Electric
SLO - San Luis Obispo
WECC - Western Electricity Coordinating Council

Prospective Closure of the Diablo Canyon Nuclear Power Plant

Economic Impact Assessment

Introduction

On September 26, 2016, Governor Jerry Brown signed Senate Bill (SB) 968 which adds Section 712.5 to the Public Utilities Code, requiring the California Public Utilities Commission (CPUC) to facilitate an economic impact assessment of the “adverse and beneficial economic impacts, and the net economic effects, for the County of San Luis Obispo and the surrounding regions, that could occur if the [Diablo Canyon Nuclear Power Plant] were to temporarily or permanently shut down....” As ordered in SB 968, the CPUC searched for an “independent third party” to conduct the economic impact assessment, and ultimately hired researchers at UC Berkeley for that role. This study is that economic impact assessment.

On January 16, 2018, the CPUC issued Decision (D.)18-01-022, approving Pacific Gas and Electric Company’s (PG&E) proposal to retire Units 1 and 2 of the Diablo Canyon Power Plant (DCPP) by 2024 and 2025 respectively, and authorizing up to \$211.3 million for DCPP employee retention programs. On September 19, 2018, Governor Brown signed SB 1090 which approved an additional \$85 million to pay for community impact mitigation programs in the San Luis Obispo region, and another \$140.8 million for DCPP employee retention. The CPUC enacted the rate changes ordered in SB 1090 when it issued D.18-11-024 on December 7, 2018. Collectively, D.18-01-022, SB 1090, and D.18-11-024, authorized up to \$352.1 million for DCPP employee retention programs, and \$85 million for community impact mitigation programs.

Currently, DCPP, which employs about 1,500 PG&E workers, is the second largest employer in SLO and provides a large economic base to the area that could be lost with the closure of DCPP. This study is intended to help identify potential ways for state and local jurisdictions to mitigate any adverse economic impacts and plan accordingly. Economic impacts were evaluated for DCPP closure, including shutdown of operations, actions necessary to safely retire the plant and make the site eligible for alternative use, and the implementation of SB 1090 which is a special assistance measure to offset adjustment costs for the SLO community. This document summarizes the five main parts of this assessment: 1) general economic impact assessment; 2) local stakeholder consultation; 3) local stakeholder survey; 4) real estate market assessment; and 5) bond market assessment.

1 General Economic Impact Assessment

1.1 Approach

The overall impact of DCPP closure on the SLO economy was the primary concern for those interested in this assessment, and most of our effort was devoted to this component. To estimate the local economic and fiscal effects of DCPP closure, as well as associated spending from decommissioning and SB 1090, we utilized a regional input-output model called IMPLAN that estimates impacts through industry-specific changes in economic activity. The IMPLAN system offers the most detailed data available on the structure of the local, regional, and state economy, and it effectively supported our efforts to identify and evaluate the appropriate scenarios to reflect closure and decommissioning of DCPP.



1.2 Methods and Data

To estimate the effect of the DCPP closure and the associated decommissioning spending we utilize a variety of empirical techniques. Our primary analysis uses a regional input-output model that estimates the economy-wide effects through industry-specific changes in economic activity. Input-output models are a common tool for impact analysis and are defined by their ability to relate the interdependence of industries and households across a regional economy. Input-output models excel in their ability to not only measure direct effects, but indirect and induced effects as well through the use of multipliers.

Conceptually, multipliers measure how expenditures in a specific sector spread through other sectors in the economy through diminishing rounds of new spending. In the context of DCPP, the “direct” effect refers to any changes in economic activity that DCPP is directly responsible for generating such as the number of jobs on site or total expenditures generated by the plant. The “indirect” effect reflects the economic activity of industries that support the operation of DCPP. This includes any associated jobs that are retained by the plant but do not work directly for PG&E (e.g. catering, security, maintenance and repair, etc.). Finally, the “induced” effect refers to the changes in household expenditures that result from the initial change in economic activity from the originating sector. This includes the local services that DCPP employees purchase (e.g. cappuccinos and

haircuts) as well as any associated increased spending from those employed indirectly. Furthermore, induced effects capture subsequent rounds of spending as they move through the economy. For example, when a DCPP employee purchases a cappuccino, the barista may purchase lunch from a vendor who buys produce from a local farm, and so forth.

To conduct our analysis we rely on the IMPLAN input-output modeling tool. IMPLAN is both a software and a collection of databases, and the detailed, proprietary data of IMPLAN makes it one of the more commonly used input-output models. IMPLAN provides information for 528 industries and 21 different economic variables, but more importantly provides the input-output structural matrices that detail the interrelationship between industries, and between industries and households. With direct economic impacts as an input, IMPLAN calculates the indirect and induced impacts through the use of constructed multipliers. IMPLAN data is available at the national, state, county, and zip-code level, making it particularly useful for impact analysis on regional economies.

With IMPLAN, or any input-output model, the key to high-quality output estimates are accurate inputs in the model. Inputs, or events in IMPLAN nomenclature, can be thought of as exogenous shocks to the economy. These represent any direct change to the economy such as changes in specific industries from categories such as revenue, expenditures, or employment. As one industry changes, IMPLAN provides estimates for changes in every other sector in the economy across the study area. Thus, IMPLAN results are completely dependent on accurate inputs.

Our primary objective is to identify the appropriate shock to the regional economy from the closure and decommissioning of DCPP. There are three primary effects we must consider. First, are the positive effects to the regional economy from the associated spending of D.18-01-022 and SB 1090. Second, are the negative effects from the loss of revenue (or associated expenditures), jobs, and taxes when DCPP closes. Third, are the positive effects from the variety of associated expenditures from decommissioning that ensure the plant can be closed safely.

Starting first with spending associated with D.18-01-022 and SB 1090 there are several expenditure categories that will have positive effects for the regional economy. First, D.18-01-022 and SB 1090 earmark approximately \$363.4 million for employee retention and retraining. Of this sum, the vast majority, up to \$350 million, will be used for employee retention in which eligible employees will receive a 25% increase to their base salary until plant closure. This effect is a pure stimulus to the regional economy as current DCPP employees who elect to remain until closure will receive additional compensation for the same work. In addition to employee retention and retraining, SB 1090 also designates \$85 million for community impact mitigation settlement. Of this, \$75 million is designated

for the Essential Services Mitigation Fund (ESMF), which is intended to help local jurisdictions offset the anticipated property tax losses from DCPP. The remaining \$10 million is for the “Economic Development Fund” (EDF), a one-time payment intended to spur economic development and mitigate anticipated economic impacts from plant closure.

The second set of effects we must consider are the negative economic impacts from closing the plant. Upon the closure of DCPP there will be three immediate impacts to the local economy. First, will be the loss of jobs and the associated spending these jobs produce. As of December 2017, DCPP employs 1,396 local employees with a payroll of approximately \$226 million. Second, are the annual expenditures the plant makes in order to operate. From 2008 - 2011 (the most recent years data has been provided), DCPP spent an average of \$374 million on goods and services, with approximately \$18 million spent locally. Third, is the loss of tax revenue from both the loss of the Unitary Property Tax on DCPP as well as additional taxes generated from employees, vendors, and general spending. The most significant of these categories is the Unitary Tax with an annual tax burden of approximately \$26.5 million.

Previous work has considered the loss of revenue from electricity sales as another potential economic impact, but we argue that expenditures and payroll represent a more accurate measure. In the absence of expenditure and payroll information, revenue might be a useful category. However, revenues are used for expenditures and payroll. Thus, profits would be of more interest, but given that PG&E is a statewide IOU remaining profits from DCPP do not stay entirely within the region. Absent data on local profits, expenditures and payroll are preferred as the local impact can be calculated. Furthermore, revenue (and profits) will simply be reallocated across the California economy as PG&E must replace the lost electricity generated.

The third and final set of effects are the positive economic impacts associated with safely decommissioning DCPP. Decommissioning estimates from PG&E were released in mid-December 2018 (see PG&E application to the CPUC, A.18-12-008), after our preliminary analysis was completed. Our analysis assumes a spending pattern similar to the decommissioning of SONGS and builds on the Beacon (2017) report, which categorized some \$3.3 billion in decommissioning spending across a broad array of services and products. We assume the same distribution of spending across categories but increase overall expenditures to \$4.8 billion to match PG&E’s current estimate. However, previous PG&E estimates have not been granted full approval by the CPUC: in the previous round of decommissioning estimates in 2015, PG&E requested \$4 billion but the CPUC only approved \$2.7 billion. The annex includes results for the most recently approved amount of \$2.7 billion, as well as a \$6 billion upper bound estimate.

We model waste management and remediation services as the overall largest spending category, comprising approximately 31% of all decommissioning expenditures. Utilities represent the next largest with 22% of total spending, followed by construction and removal of structures (20%), architecture, engineering, and related services (14%), and investigation and security services (8%). Expenditures in all other categories represent less than 1.5% of total spending and include categories such as marketing, telecommunication support, and heavy machine rental among others.

Before moving to our results, we must discuss timing. There are two timing considerations worth noting; when the expected impacts will occur and for how long. Spending associated with D.18-01-022 and SB 1090 will occur *before* the closure of DCPP and thus these economic impacts should be assessed separately from the impacts upon DCPP closure. Additionally, D.18-01-022 and SB 1090 spending will be issued at slightly different intervals. The majority of the spending will be distributed across seven years until plant closure. Retention payments will be issued in two tiers, but for simplicity we assume they are distributed evenly across seven years. The ESMF funds will be distributed annually in seven equal and consecutive payments of \$8.3 million. The EDF funds are a one-time distribution. While the exact timing of how the EDF funds are spent will not be known until they are issued, San Luis Obispo County has indicated that they plan to spend these funds immediately upon receipt, and thus we assume they will be exhausted in one year. To help simplify these timing considerations to allow more meaningful interpretation, we assume the SB 1090 funds will be split evenly over 7 years, with a one-year boost in the first year from the EDF funds.

The next set of impacts occur *after* the closure of DCPP. These include the negative economic impacts associated with closing the plant from the loss of jobs, expenditures, and tax base. These also include the positive economic impacts from decommissioning expenditures. These impacts will occur concurrently for a length of time and thus correctly modeling the timing of the decommissioning expenditures is important to gauge the size of the overall effect. While the economic losses from the plant closure will persist in perpetuity, the long-term impacts are less clear given the uncertainty surrounding the long-term plans for the site. Furthermore, the San Luis Obispo regional economy is dynamic and simply extending multiplier effects in perpetuity is an inaccurate assumption. As new industries enter the region, the interrelationship between industries (and between industries and households) will undoubtedly change. Therefore, we argue that the most important economic impacts to consider are those that occur immediately after plant closure, when decommissioning expenditures are present and will offset the economic losses from the plant closure. Again, to help simplify timing considerations to allow meaningful interpretation we assume total decommissioning expenditures will be split evenly across 10 years.

1.3 Results

Below we present our results for the IMPLAN analysis. Results are presented in three parts. First, are the positive economic impacts associated with SB1090, which will occur before DCPP closes. Second, are the negative economic impacts from the loss of employment and plant expenditures from the closure of DCPP. This effect occurs after the closure of the plant. Third, are the positive economic impacts from the decommissioning expenditures needed to safely bring the power plant offline. These also occur after the closure of the plant. Results are presented for San Luis Obispo County, Santa Barbara County, and the Rest of California.

For each section, results are presented for the top ten impacted economic sectors for both economic output and employment. These sectors come from the 528 IMPLAN sectors and are self-explanatory with a few exceptions. One obscure sector that is common throughout our results is “Owner-Occupied Dwellings.” This sector estimates the homeownership industry by capturing expenses associated with homeownership such as repair and maintenance, mortgage payments, and other expenditures related to home upkeep.

We use the 2016 version of IMPLAN, which is the most recent version available at the time of our analysis. Therefore, we present results in 2016 dollars to limit assumptions surrounding inflation. Employment estimates are for Full Time Equivalent (FTE) positions, which means one employee working full time.

1.3.1 SB 1090: ESMF and Retention

SB 1090 is comprised of many different spending packages to help offset the economic losses from closing DCPP. As previously discussed, this spending will occur across different time intervals. Specifically, retention payments and spending from the ESMF will be spread across seven years, while spending from the EDF will be a one-time payment. Therefore, we report results separately as retention/ESMF and EDF.

Starting first with the ESMF and retention plan we present results for San Luis Obispo County, Santa Barbara County, and the Rest of California in Tables 1 - 9. Given that spending will be concentrated almost entirely within San Luis Obispo County, it comes as no surprise that the largest effects are seen here. In Table 1, total output is estimated at roughly \$40.1 million per year for seven years. The largest impacted sectors are spread across those affected from retention payments (e.g. homeownership and real estate, restaurants, medical) and the ESMF (e.g. employment in government and education).

Regarding job creation, we find modest impacts for San Luis Obispo County. Table 2 suggests that the ESMF is responsible for increases in direct employment in government

and education sectors, while retention payments see increases in induced employment in sectors associated with increased consumer spending. Overall, the ESMF and retention payments are expected to create roughly 350 FTE jobs annually across 7 years. For state and local tax impacts, Table 3 reveals that sales, property, and income will be the largest categories with annual contributions of \$1, \$0.9, and \$0.5 million respectively. The total tax benefit from the ESMF and retention payments is estimated at \$2.8 million annually for 7 years.

Similar results for Santa Barbara are presented in Tables 4 – 6. Given that Santa Barbara is primarily affected through the increased payment to DCPP employees from the retention plan, there are no direct effects seen for output or job creation. The primary impacts here come from increased salaries through retention which lead to induced effects in sectors reliant on consumer spending. In total, some \$4.3 million in annual output is forecasted for seven years in Santa Barbara (Table 4). For employment and taxes, we find minimal impacts. Increased spending from retention payments will result in an increase of approximately 30 FTE jobs (Table 5). Tax revenue will increase by some \$280 thousand being driven by sales, property, and income taxes (Table 6).

Much like Santa Barbara County, the rest of California also has no direct impacts and sees minimal impacts (Tables 7 - 9). The primary impacts of the ESMF and retention plan result in increased output and jobs that are local in nature and do not require intermediary inputs (i.e. government and service sector). Therefore, impacts to the rest of California are primarily induced as dollars spent locally recirculate within California before leaking out to other states or countries. Although overall impacts in the rest of California are larger than Santa Barbara County at \$7 million (Table 7), this impact is virtually zero when compared to the overall size of the rest of California's economy (IMPLAN estimates the gross regional product at ~ \$2.5 trillion in 2016). Similarly, approximately 35 FTE jobs are forecasted in Table 8, but this will barely register when compared with the 22 million jobs in the rest of California. Increases to tax revenues are minimal as well with an expected annual impact of \$84 thousand as seen in Table 9.

It should be noted that homes of departing households will be reappraised upon resale, and if they were long term residents this could lead to significant tax increases from reassessments even if current house prices remain stable. We estimated this potential effect on local revenues to be negligible, however.

Table 1: Total Annual Economic Impact of SB 1090 ESMF and DCPP Employee Retention, San Luis Obispo County, (2016 Dollars Annually for 7 Years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$9,002,092	\$451,957	\$31,525,141	\$40,979,190
1	Owner-occupied dwellings	\$0	\$0	\$5,286,105	\$5,286,105
2	Real estate	\$126,977	\$60,762	\$2,748,843	\$2,936,582
3	Employment and payroll of local govt, education	\$2,925,822	\$0	\$0	\$2,925,822
4	Employment and payroll of state govt, non-education	\$1,720,857	\$0	\$0	\$1,720,857
5	Employment and payroll of state govt, education	\$1,431,373	\$0	\$0	\$1,431,373
6	Limited-service restaurants	\$71,771	\$4,542	\$1,295,293	\$1,371,606
7	Hospitals	\$0	\$0	\$1,322,672	\$1,322,672
8	Wholesale trade	\$64,232	\$25,019	\$1,187,537	\$1,276,789
9	Employment and payroll of local govt, non-education	\$1,214,311	\$0	\$0	\$1,214,311
10	Offices of physicians	\$1,113	\$0	\$1,202,331	\$1,203,444
	Total all other categories	\$1,445,637	\$361,633	\$18,482,359	\$20,289,630

Table 2: FTE Jobs from SB 1090 ESMF and DCPP Retention, San Luis Obispo County (Annually for 7 Years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	96	3	249	349
1	Employment and payroll of local govt, education	35	0	0	35
2	Employment and payroll of state govt, education	21	0	0	21
3	Real estate	1	0	17	19
4	Full-service restaurants	0	0	15	16
5	Employment and payroll of state govt, non-education	16	0	0	16
6	Limited-service restaurants	1	0	14	15
7	Employment and payroll of local govt, non-education	11	0	0	11
8	Individual and family services	0	0	9	9
9	Offices of physicians	0	0	9	9
10	Retail - Food and beverage stores	0	0	8	8
	Total all other categories				

Table 3: State and Local Tax Impact of SB 1090 ESMF and DCPP Retention, San Luis Obispo County, (2016 Dollars Annually for 7 Years)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	\$4,253
Social Ins Tax- Employee Contribution	\$28,014	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	\$58,683	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	\$1,014,740	\$0	\$0
TOPI: Property Tax	\$0	\$0	\$900,867	\$0	\$0
TOPI: Vehicle License	\$0	\$0	\$19,677	\$0	\$0
TOPI: Severance Tax	\$0	\$0	\$928	\$0	\$0
TOPI: Other Taxes	\$0	\$0	\$91,610	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	\$12,048	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	\$75,844
Personal Income Tax	\$0	\$0	\$0	\$521,616	\$0
Personal Tax: NonTaxes	\$0	\$0	\$0	\$72,611	\$0
Personal Tax: Vehicle License	\$0	\$0	\$0	\$17,997	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	\$8,032	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	\$3,536	\$0
Total State and Local Tax	\$86,697	\$0	\$2,039,872	\$623,793	\$80,097

Table 4: Total Annual Economic Impact of SB 1090 ESMF and DCPP Employee Retention, Santa Barbara County (2016 Dollars Annually for 7 Years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$0	\$77,198	\$4,259,754	\$4,336,953
1	Owner-occupied dwellings	\$0	\$0	\$528,277	\$528,277
2	Real estate	\$0	\$8,492	\$443,844	\$452,336
3	Hospitals	\$0	\$0	\$217,587	\$217,587
4	Wholesale trade	\$0	\$9,067	\$205,476	\$214,545
5	Other local government enterprises	\$0	\$4,289	\$159,908	\$164,197
6	Offices of physicians	\$0	\$0	\$136,818	\$136,818
7	Limited-service restaurants	\$0	\$351	\$133,206	\$133,559
8	Monetary authorities and depository credit intermediation	\$0	\$730	\$96,952	\$97,682
9	Other financial investment activities	\$0	\$450	\$87,596	\$88,046
10	Full-service restaurants	\$0	\$194	\$82,399	\$82,593
	Total all other categories	\$0	\$53,623	\$2,167,691	\$2,221,314

Table 5: FTE Jobs from SB 1090 ESMF and DCPP Retention, in Santa Barbara County (Annually for 7 Years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	0	0	29	30
1	Real estate	0	0	2	2
2	Full-service restaurants	0	0	1	1
3	Limited-service restaurants	0	0	1	1
4	Hospitals	0	0	1	1
5	Wholesale trade	0	0	1	1
6	Offices of physicians	0	0	1	1
7	Services to buildings	0	0	1	1
8	Individual and family services	0	0	1	1
9	Retail - Food and beverage stores	0	0	1	1
10	Retail - General merchandise stores	0	0	1	1
Total all other categories					

Table 6: State and Local Tax Impact of SB 1090 ESMF and DCPP Retention, Santa Barbara County, (2016 Dollars Annually for 7 Years)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	\$477
Social Ins Tax- Employee Contribution	\$2,233	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	\$4,679	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	\$97,799	\$0	\$0
TOPI: Property Tax	\$0	\$0	\$94,362	\$0	\$0
TOPI: Vehicle License	\$0	\$0	\$2,299	\$0	\$0
TOPI: Severance Tax	\$0	\$0	\$108	\$0	\$0
TOPI: Other Taxes	\$0	\$0	\$13,172	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	\$1,319	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	\$8,234
Personal Income Tax	\$0	\$0	\$0	\$46,844	\$0
Personal Tax: NonTaxes (Fines- Fees	\$0	\$0	\$0	\$6,562	\$0
Personal Tax: Vehicle Licenseense	\$0	\$0	\$0	\$1,610	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	\$642	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	\$319	\$0
Total State and Local Tax	\$6,911	\$0	\$209,061	\$55,975	\$8,711

Table 7: Total Annual Economic Impact of SB 1090 ESMF and DCPP Employee Retention, Rest of California (2016 Dollars Annually for 7 Years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$0	\$286,160	\$6,263,058	\$6,549,218
1	Management of companies and enterprises	\$0	\$20,584	\$418,830	\$439,416
2	Employment services	\$0	\$27,024	\$354,637	\$381,662
3	Other financial investment activities	\$0	\$5,242	\$369,936	\$375,178
4	Wholesale trade	\$0	\$13,031	\$243,888	\$256,920
5	Real estate	\$0	\$6,107	\$230,718	\$236,826
6	Nondepository credit intermediation and related activities	\$0	\$4,614	\$189,247	\$193,863
7	Owner-occupied dwellings	\$0	\$0	\$181,380	\$181,380
8	Legal services	\$0	\$6,606	\$170,150	\$176,756
9	Wireless telecommunications carriers (except satellite)	\$0	\$9,411	\$158,682	\$168,093
10	Internet publishing and broadcasting and web search portals	\$0	\$9,625	\$155,173	\$164,799
Total all other categories		\$0	\$183,912	\$3,790,414	\$3,974,327

Table 8: FTE Jobs from SB1090 ESMF and DCPP Retention, Rest of California (Annually for 7 Years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	0	1	34	35
1	Employment services	0	0	4	5
2	Other financial investment activities	0	0	2	2
3	Management of companies and enterprises	0	0	2	2
4	Warehousing and storage	0	0	1	1
5	Wholesale trade	0	0	1	1
6	Nondepository credit intermediation and related activities	0	0	1	1
7	Investigation and security services	0	0	1	1
8	Real estate	0	0	1	1
9	Legal services	0	0	1	1
10	Full-service restaurants	0	0	1	1
Total all other categories					

Table 9: State and Local Tax Impact of SB 1090 ESMF and DCPP Retention, Rest of California, (2016 Dollars Annually for 7 Years)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	\$189
Social Ins Tax- Employee Contribution	\$827	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	\$1,731	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	\$27,028	\$0	\$0
TOPI: Property Tax	\$0	\$0	\$25,074	\$0	\$0
TOPI: Vehicle License	\$0	\$0	\$630	\$0	\$0
TOPI: Severance Tax	\$0	\$0	\$30	\$0	\$0
TOPI: Other Taxes	\$0	\$0	\$3,739	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	\$469	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	\$3,298
Personal Income Tax	\$0	\$0	\$0	\$17,304	\$0
Personal Tax: NonTaxes (Fines- Fees	\$0	\$0	\$0	\$2,557	\$0
Personal Tax: Vehicle Licenseense	\$0	\$0	\$0	\$594	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	\$228	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	\$117	\$0
Total State and Local Tax	\$2,556	\$0	\$56,970	\$20,800	\$3,487

1.3.2 SB1090: EDF

The other main component of SB 1090 funds is the EDF, which is comprised of a one-time \$10 million payment intended to spur economic development in San Luis Obispo County. Although direct spending will be concentrated entirely in San Luis Obispo County, we present results for indirect and induced effects for Santa Barbara County and the rest of California for completeness. Results are presented below in Tables 10 - 18.

Starting first with San Luis Obispo County, we find in Table 10 that the EDF will increase output by approximately \$13 million. Note that the primary affected sectors are those most associated with economic development and lean heavily towards construction. This is in contrast to the ESMF whose goal is to retain essential services. Furthermore, multiplier effects are not as strong since we see less changes in household expenditures due to the lack of the increased salary payments in higher-income brackets from the retention payments. In regard to employment, Table 11 finds similar trends for output with a higher concentration of direct effects in construction sectors. In total, we find the EDF will increase employment by 87 jobs. Finally, Table 12 considers the state and local tax impact. We find that the EDF will contribute roughly \$500,000 in additional tax revenue.

Turning to Santa Barbara County and the Rest of California, we find minimal effects, which is no surprise given that funds will be spent entirely within San Luis Obispo County. Santa Barbara will see approximately \$400,000 in increased output, 2.4 new jobs, and \$33,000 more state and local tax (Tables 13 - 15 respectively). For the rest of California, effects are comparatively larger than Santa Barbara but overall insignificant given the size of the regional economy (Tables 16 - 18).

Table 10: Total Annual Economic Impact of SB 1090 EDF, San Luis Obispo County (2016 Dollars for 1 year)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$8,383,264	\$2,167,208	\$2,282,487	\$12,832,959
1	Construction of other new nonresidential structures	\$2,564,013	\$0	\$0	\$2,564,013
2	Construction of new multifamily residential structures	\$2,412,037	\$0	\$0	\$2,412,037
3	Construction of new highways and streets	\$1,937,773	\$0	\$0	\$1,937,773
4	Wholesale trade	\$99,104	\$261,138	\$85,837	\$446,079
5	Owner-occupied dwellings	\$0	\$0	\$389,069	\$389,069
6	Real estate	\$0	\$164,723	\$195,886	\$360,609
7	Scientific research and development services	\$225,946	\$6,196	\$1,051	\$233,193
8	Custom computer programming services	\$217,014	\$584	\$281	\$217,879
9	Construction of new commercial structures, including farm structures	\$213,590	\$0	\$0	\$213,590
10	Architectural, engineering, and related services	\$0	\$177,559	\$11,961	\$189,520
	Total all other categories	\$713,786	\$1,557,008	\$1,598,403	\$3,869,198

Table 11: FTE Jobs from SB 1090 EDF, San Luis Obispo County (1 year)

Description		Direct	Indirect	Induced	Total
Total		53	15	18	87
1	Construction of other new nonresidential structures	19	0	0	19
2	Construction of new multifamily residential structures	15	0	0	15
3	Construction of new highways and streets	11	0	0	11
4	Real estate	0	1	1	2
5	Wholesale trade	0	1	0	2
6	Construction of new commercial structures, including farm structures	2	0	0	2
7	Custom computer programming services	1	0	0	1
8	Full-service restaurants	0	0	1	1
9	Architectural, engineering, and related services	0	1	0	1
10	Construction of new power and communication structures	1	0	0	1
Total all other categories					

Table 12: State and Local Tax Impact of SB 1090 EDF, San Luis Obispo County (2016 Dollars for 1 Year)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends					\$1,010
Social Ins Tax- Employee Contribution	\$6,265				
Social Ins Tax- Employer Contribution	\$13,124				
TOPI: Sales Tax			\$179,373		
TOPI: Property Tax			\$159,244		
TOPI: Vehicle License			\$3,478		
TOPI: Severance Tax			\$164		
TOPI: Other Taxes			\$16,194		
TOPI: S/L NonTaxes			\$2,130		
Corporate Profits Tax					\$18,003
Personal Income Tax				\$139,436	
Personal Tax: NonTaxes (Fines- Fees				\$19,410	
Personal Tax: Vehicle Licensee				\$4,811	
Personal Tax: Property Taxes				\$2,147	
Personal Tax: Other Tax (Fish/Hunt)				\$945	
Total State and Local Tax	\$19,389		\$360,583	\$166,750	\$19,013

**Table 13: Total Annual Economic Impact of SB 1090 EDF, Santa Barbara County
(2016 Dollars for 1 year)**

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$0	\$281,726	\$135,929	\$417,656
1	Wholesale trade	\$0	\$92,289	\$8,903	\$101,193
2	Real estate	\$0	\$26,619	\$20,280	\$46,899
3	Other local government enterprises	\$0	\$10,087	\$6,265	\$16,353
4	Commercial and industrial machinery and equipment rental and leasing	\$0	\$12,771	\$571	\$13,343
5	Owner-occupied dwellings	\$0	\$0	\$10,826	\$10,826
6	Extraction of natural gas and crude petroleum	\$0	\$8,972	\$1,557	\$10,529
7	Office administrative services	\$0	\$6,609	\$1,850	\$8,459
8	Cable and other subscription programming	\$0	\$3,709	\$3,754	\$7,462
9	Lessors of nonfinancial intangible assets	\$0	\$5,332	\$1,963	\$7,295
10	Nondepository credit intermediation and related activities	\$0	\$2,934	\$3,466	\$6,400
	Total all other categories	\$0	\$112,404	\$76,493	\$188,897

Table 14: FTE Jobs from SB 1090 EDF, Santa Barbara County (per year)

Rank	Description	Direct	Indirect	Induced	Total
	Total	0	1	1	2
1	Wholesale trade	0	0	0	0
2	Real estate	0	0	0	0
3	Office administrative services	0	0	0	0
4	Employment services	0	0	0	0
5	Marketing research and all other miscellaneous professional, scientific, and technical services	0	0	0	0
6	Accounting, tax preparation, bookkeeping, and payroll services	0	0	0	0
7	Services to buildings	0	0	0	0
8	Other local government enterprises	0	0	0	0
9	Full-service restaurants	0	0	0	0
10	Legal services	0	0	0	0
	Total all other categories				

**Table 15: State and Local Tax Impact of SB 1090 EDF, Santa Barbara County
(2016 Dollars for 1 Year)**

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends					\$42
Social Ins Tax- Employee Contribution	\$217				
Social Ins Tax- Employer Contribution	\$454				
TOPI: Sales Tax			\$12,098		
TOPI: Property Tax			\$11,672		
TOPI: Vehicle License			\$284		
TOPI: Severance Tax			\$13		
TOPI: Other Taxes			\$1,629		
TOPI: S/L NonTaxes			\$163		
Corporate Profits Tax					\$731
Personal Income Tax				\$4,542	
Personal Tax:					
NonTaxes (Fines- Fees					\$636
Personal Tax: Vehicle Licenseense					\$156
Personal Tax: Property Taxes					\$62
Personal Tax: Other Tax (Fish/Hunt)					\$31
Total State and Local Tax	\$671		\$25,861	\$5,428	\$773

Table 16: Total Annual Economic Impact of SB 1090 EDF, Rest of California (2016 Dollars for 1 year)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$0	\$1,735,238	\$905,863	\$2,641,101
1	Wholesale trade	\$0	\$127,858	\$38,458	\$166,316
2	Management of companies and enterprises	\$0	\$80,339	\$35,941	\$116,281
3	Employment services	\$0	\$75,088	\$28,405	\$103,493
4	Truck transportation	\$0	\$73,861	\$10,615	\$84,476
5	Petroleum refineries	\$0	\$72,416	\$10,129	\$82,545
6	Real estate	\$0	\$29,053	\$47,592	\$76,645
7	Owner-occupied dwellings	\$0	\$0	\$65,401	\$65,401
8	Other concrete product manufacturing	\$0	\$61,931	\$372	\$62,303
9	Legal services	\$0	\$31,837	\$17,812	\$49,649
10	Wireless telecommunications carriers (except satellite)	\$0	\$28,943	\$20,517	\$49,459
	Total all other categories	\$0	\$1,153,912	\$630,622	\$1,784,534

Table 17: FTE Jobs from SB 1090 EDF, Rest of California (2016 Dollars for 1 year)

Rank	Description	Direct	Indirect	Induced	Total
	Total	0	8	5	13
1	Employment services	0	1	0	1
2	Wholesale trade	0	1	0	1
3	Truck transportation	0	0	0	1
4	Management of companies and enterprises	0	0	0	0
5	Warehousing and storage	0	0	0	0
6	Real estate	0	0	0	0
7	Other concrete product manufacturing	0	0	0	0
8	Full-service restaurants	0	0	0	0
9	Other financial investment activities	0	0	0	0
10	Investigation and security services	0	0	0	0
Total all other categories					

Table 18: State and Local Tax Impact of SB 1090 EDF, Rest of California (2016 Dollars for 1 Year)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends					\$292
Social Ins Tax- Employee Contribution	\$1,470				
Social Ins Tax- Employer Contribution	\$3,079				
TOPI: Sales Tax			\$38,971		
TOPI: Property Tax			\$32,033		
TOPI: Vehicle License			\$884		
TOPI: Severance Tax			\$42		
TOPI: Other Taxes			\$5,801		
TOPI: S/L NonTaxes			\$1,103		
Corporate Profits Tax					\$5,262
Personal Income Tax				\$28,312	
Personal Tax: NonTaxes (Fines- Fees					\$4,669
Personal Tax: Vehicle Licenseense					\$970
Personal Tax: Property Taxes					\$341
Personal Tax: Other Tax (Fish/Hunt)					\$192
Total State and Local Tax	\$4,549		\$78,834	\$34,484	\$5,555

1.3.3 DCPP Closure

This section considers the negative economic impacts associated with the closure of DCPP. As previously mentioned, negative economic impacts will occur through three primary inputs: the loss of the approximately 1,396 jobs and payroll of \$226 million, the loss of roughly \$374 million in expenditures on intermediary goods and services to operate DCPP, and the loss of the \$26.5 million foregone in unitary property tax revenue.

Before moving to the discussion of the results, it should be noted that these results represent the extreme upper bound when DCPP is completely decommissioned. There will of course be a ramping down of employment, payroll, and expenditures during the decommissioning phase, but we were unable to model these interim effects without detailed inputs from PG&E. Specifically, we would need a timeline for each of the inputs in order to accurately model the impacts. For example, our results include the direct loss of 1,396 jobs when the plant closes. There will of course be a period of time when current DCPP employees are retained that operate concurrently with the decommissioning estimates below. During this time period the effects will be below what we forecast here. However, our objective is to provide estimates on the overall impact, which is what our results present here. These results should be considered as the upper bound scenario, providing the necessary benchmark to compare to the overall decommissioning expenditures.

Results for the closure of DCPP are reported for San Luis Obispo County, Santa Barbara County, and the Rest of California below in Tables 19 - 27. Starting first with San Luis Obispo County, we find that the closure of DCPP will result in a reduction of some \$800 million in output, the majority of which is concentrated in direct effects in the nuclear sector (Table 19). These direct effects total a loss of approximately \$600 million in output and are comprised of the two direct inputs: \$226 million in payroll and \$374 million in expenditures.

Given that the only direct effects will occur in the nuclear sector, the next largest categories are those affected by the indirect and induced effects. Once again, we see a similar trend where reductions in payroll will reduce household expenditures and impact associated sectors such as homeownership, real-estate, restaurants, and healthcare. These sectors are represented by comparatively larger induced impacts. There are also sectors affected by the decrease in expenditures such as petroleum refineries, wholesale trade, and maintenance. These sectors experience comparatively larger indirect impacts as they are affected through the operations of DCPP rather than changes to household expenditures.

Moving to employment in San Luis Obispo County, we find that the closure of DCPP will result in the loss of approximately 3,000 jobs, the majority of which come directly from

DCPP (Table 20). Sectors that indirectly support DCPP will see a loss in employment and include marketing, maintenance, and wholesale trade. There will be induced job losses as well from the reduction in household expenditures in sectors that are most affected by discretionary spending.

The tax impact for San Luis Obispo County is presented in Table 21. The overall largest loss will be the \$31 million reduction in property tax, both from the Unitary Tax of DCPP as well as additional property taxes paid by DCPP employees and vendors. Taken together, the closure of DCPP will reduce payments to state and local taxes by approximately \$40 million annually.

For Santa Barbara County, the economic impacts will be significantly less and largely concentrated as induced effects. Table 22 shows that total output will reduce by \$22 million, \$19 million coming from induced effects. These large induced impacts reflect reduced household expenditures from payroll reductions of local employees rather than reductions in expenditures from DCPP. Although some expenditures of goods and services for DCPP come from Santa Barbara County, this finding suggests that DCPP vendors are primarily located in San Luis Obispo County, elsewhere in California, or outside the state.

Employment in Santa Barbara County follows a similar pattern as seen in Table 23. We find that approximately 150 jobs will be lost upon the closure of DCPP, largely concentrated as induced impacts from sectors most affected by reduced household expenditures. These include real estate, health care, and other sectors affected by discretionary spending such as restaurants and retail.

Taxes in Santa Barbara County will be minimally affected compared to San Luis Obispo County. The primary impacts are once again driven by reduced employee payroll and include property, sales, and income tax of DCPP employees. In total, tax revenue will decrease by \$1.4 million annually (Table 24).

Results for the rest of California are presented in Tables 25- 27. Once again, impacts are split between indirect and induced. As PG&E purchases more goods and services from the rest of California for the operation of DCPP, we see larger indirect effects here than for Santa Barbara County. Impacts to the rest of California are concentrated in different sectors than both San Luis Obispo and Santa Barbara Counties as there are limited impacts to sectors that are characterized by local spending. The total economic impact to California is the loss of approximately \$40 million in output and 200 jobs, which is a very insignificant impact compared to the overall size of the state economy. Lost tax revenue is also minimal.

Table 19: Total Economic Impact of DCPP Closure, San Luis Obispo County (2016 Dollars Annually)

Rank	Description	Direct	Indirect	Induced	Total
	Total	-\$600,868,412	-\$66,081,131	\$133,868,350	-\$800,817,893
1	Electric power generation - Nuclear	-\$600,868,412	-\$2	-\$7	-\$600,868,421
2	Owner-occupied dwellings	\$0	\$0	-\$22,475,912	-\$22,475,912
3	Real estate	\$0	-\$3,964,211	-\$11,656,948	-\$15,621,158
4	Petroleum refineries	\$0	-\$10,900,382	-\$1,268,488	-\$12,168,870
5	Wholesale trade	\$0	-\$3,120,947	-\$5,041,909	-\$8,162,856
6	Monetary authorities and depository credit intermediation	\$0	-\$4,000,325	-\$3,835,274	-\$7,835,599
7	Maintenance and repair construction of nonresidential structures	\$0	-\$6,789,003	-\$900,588	-\$7,689,591
8	Full-service restaurants	\$0	-\$2,340,982	-\$3,549,049	-\$5,890,031
9	Limited-service restaurants	\$0	-\$364,132	-\$5,500,576	-\$5,864,708
10	Hospitals	\$0	\$0	-\$5,607,787	-\$5,607,787
	Total all other categories	\$0	-\$34,601,148	-\$74,031,810	-\$108,632,959

Table 20: FTE Jobs from DCPP Closure, San Luis Obispo County (Annually)

Rank	Description	Direct	Indirect	Induced	Total
	Total		-1,396	-453	-1,059
1	Electric power generation - Nuclear	-1,396	0	0	-1,396
2	Full-service restaurants	0	-43	-66	-109
3	Real estate	0	-25	-74	-99
4	Marketing research and all other miscellaneous professional, scientific, and technical services	0	-85	-4	-89
5	Limited-service restaurants	0	-4	-58	-62
6	Maintenance and repair construction of nonresidential structures	0	-44	-6	-49
7	Wholesale trade	0	-15	-25	-41
8	Individual and family services	0	0	-39	-39
9	Offices of physicians	0	0	-37	-37
10	Retail - Food and beverage stores	0	0	-33	-33
	Total all other categories	0	-236	-718	-954

Table 21: State and Local Tax Impact of DCPP Closure, San Luis Obispo County, (2016 Dollars)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	-\$22,003
Social Ins Tax- Employee Contribution	-\$87,807	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	-\$183,930	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	-\$5,195,359	\$0	\$0
TOPI: Property Tax	\$0	\$0	-\$31,163,249	\$0	\$0
TOPI: Vehicle License	\$0	\$0	-\$100,743	\$0	\$0
TOPI: Severance Tax	\$0	\$0	-\$4,753	\$0	\$0
TOPI: Other Taxes	\$0	\$0	-\$469,036	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	-\$61,692	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	-\$392,364
Personal Income Tax	\$0	\$0	\$0	-\$1,901,009	\$0
Personal Tax: NonTaxes (Fines- Fees)	\$0	\$0	\$0	-\$264,628	\$0
Personal Tax: Vehicle Licenseense	\$0	\$0	\$0	-\$65,593	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	-\$29,272	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	-\$12,886	\$0
Total State and Local Tax	-\$271,737	\$0	-\$36,994,832	-\$2,273,387	-\$414,367

Table 22: Total Economic Impact of DCPP Closure, Santa Barbara County (2016 Dollars Annually)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$0	-\$2,582,362	-\$19,399,083	-\$21,981,445
1	Owner-occupied dwellings	\$0	\$0	-\$2,446,104	-\$2,446,104
2	Real estate	\$0	-\$244,769	-\$1,984,151	-\$2,228,919
3	Wholesale trade	\$0	-\$262,633	-\$918,372	-\$1,181,005
4	Hospitals	\$0	\$0	-\$1,008,564	-\$1,008,564
5	Other local government enterprises	\$0	-\$195,725	-\$716,430	-\$912,155
6	Extraction of natural gas and crude petroleum	\$0	-\$573,840	-\$114,467	-\$688,307
7	Offices of physicians	\$0	\$0	-\$633,898	-\$633,898
8	Limited-service restaurants	\$0	-\$10,512	-\$615,734	-\$626,245
9	Monetary authorities and depository credit intermediation	\$0	-\$25,768	-\$442,582	-\$468,350
10	Other financial investment activities	\$0	-\$21,012	-\$399,638	-\$420,650
	Total all other categories	\$0	-\$1,248,103	-\$10,119,146	-\$11,367,248

Table 23: FTE Jobs from DCPP Closure, Santa Barbara County (Annually)

Rank	Description	Direct	Indirect	Induced	Total
	Total	0	-13	-134	-147
1	Real estate	0	-1	-9	-11
2	Full-service restaurants	0	0	-7	-7
3	Limited-service restaurants	0	0	-6	-6
4	Hospitals	0	0	-5	-5
5	Wholesale trade	0	-1	-4	-5
6	Offices of physicians	0	0	-4	-4
7	Services to buildings	0	0	-4	-4
8	Individual and family services	0	0	-4	-4
9	Retail - Food and beverage stores	0	0	-3	-3
10	Retail - General merchandise stores	0	0	-3	-3
Total all other categories					

Table 24: State and Local Tax Impact of DCPP Closure, Santa Barbara County, (2016 Dollars)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	-\$2,413
Social Ins Tax- Employee Contribution	-\$11,554	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	-\$24,202	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	-\$490,052	\$0	\$0
TOPI: Property Tax	\$0	\$0	-\$472,831	\$0	\$0
TOPI: Vehicle License	\$0	\$0	-\$11,519	\$0	\$0
TOPI: Severance Tax	\$0	\$0	-\$546	\$0	\$0
TOPI: Other Taxes	\$0	\$0	-\$66,007	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	-\$6,611	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	-\$41,649
Personal Income Tax	\$0	\$0	\$0	-\$240,115	\$0
Personal Tax: NonTaxes (Fines- Fees	\$0	\$0	\$0	-\$33,635	\$0
Personal Tax: Vehicle Licensee	\$0	\$0	\$0	-\$8,254	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	-\$3,291	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	-\$1,632	\$0
Total State and Local Tax	-\$35,756	\$0	-\$1,047,563	-\$286,927	-\$44,062

Table 25: Total Economic Impact of DCPP Closure, Rest of California (2016 Dollars Annually)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$0	-\$9,044,158	-\$29,411,008	-\$38,455,166
1	Management of companies and enterprises	\$0	-\$685,834	-\$1,820,650	-\$2,506,485
2	Employment services	\$0	-\$716,452	-\$1,537,654	-\$2,254,106
3	Other financial investment activities	\$0	-\$347,922	-\$1,643,965	-\$1,991,887
4	Wholesale trade	\$0	-\$378,161	-\$1,168,020	-\$1,546,181
5	Real estate	\$0	-\$208,595	-\$1,160,453	-\$1,369,049
6	Owner-occupied dwellings	\$0	\$0	-\$1,065,659	-\$1,065,659
7	Internet publishing and broadcasting and web search portals	\$0	-\$357,160	-\$684,233	-\$1,041,394
8	Nondepository credit intermediation and related activities	\$0	-\$173,955	-\$840,224	-\$1,014,178
9	Wireless telecommunications carriers (except satellite)	\$0	-\$263,816	-\$733,431	-\$997,247
10	Legal services	\$0	-\$213,210	-\$761,966	-\$975,177
Total all other categories		\$0	-\$5,699,052	-\$17,994,752	-\$23,693,804

Table 26: FTE Jobs from DCPP Closure, Rest of California (Annually)

Rank	Description	Direct	Indirect	Induced	Total
	Total	0	-46	-162	-208
1	Employment services	0	-9	-19	-27
2	Other financial investment activities	0	-2	-9	-10
3	Management of companies and enterprises	0	-3	-7	-9
4	Warehousing and storage	0	-2	-6	-8
5	Wholesale trade	0	-2	-5	-6
6	Investigation and security services	0	-2	-4	-6
7	Nondepository credit intermediation and related activities	0	-1	-4	-5
8	Real estate	0	-1	-4	-5
9	Legal services	0	-1	-4	-5
10	Full-service restaurants	0	0	-4	-4
Total all other categories					

Table 27: State and Local Tax Impact of DCPP Closure, Rest of California, (2016 Dollars)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	-\$2,413
Social Ins Tax- Employee Contribution	-\$11,554	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	-\$24,202	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	-\$490,052	\$0	\$0
TOPI: Property Tax	\$0	\$0	-\$472,831	\$0	\$0
TOPI: Vehicle License	\$0	\$0	-\$11,519	\$0	\$0
TOPI: Severance Tax	\$0	\$0	-\$546	\$0	\$0
TOPI: Other Taxes	\$0	\$0	-\$66,007	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	-\$6,611	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	-\$41,649
Personal Income Tax	\$0	\$0	\$0	-\$240,115	\$0
Personal Tax: NonTaxes (Fines- Fees	\$0	\$0	\$0	-\$33,635	\$0
Personal Tax: Vehicle Licenseense	\$0	\$0	\$0	-\$8,254	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	-\$3,291	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	-\$1,632	\$0
Total State and Local Tax	-\$35,756	\$0	-\$1,047,563	-\$286,927	-\$44,062

1.3.4 DCPP Decommissioning Expenditures

This section presents results for the economic impacts of decommissioning expenditures associated with the closure of DCPP for San Luis Obispo County, Santa Barbara County, and the Rest of California in Tables 28-36. These results should be compared to results from the following section as economic impacts will occur concurrently for a period of time. These estimates represent the currently requested amount of \$4.8 billion from PG&E. Tables in the annex present results for both the approved funds (\$2.8 billion) as well as an upper bound (\$6 billion).

Once again starting first with San Luis Obispo County where the majority of impacts will occur, we find that decommissioning expenditures will produce over \$724 million in annual output as seen in Table 28. Note that these expenditures assume the entire amount of decommissioning expenditures will be split evenly across 10 years and will be concentrated within the county (as opposed to hiring employees from out of the region or state). We see that the sectors most impacted by the decommissioning expenditures are

those associated the largest direct inputs. We also see that for every \$2 spent in decommissioning expenditures an additional \$1 are created through the multiplier effects.

In regard to employment, we find in Table 29

Table A - 69 that decommissioning expenditures will produce approximately 4,940 jobs annually for 10 years. Much like output, the majority of the jobs will be concentrated as direct employment as a result of decommissioning expenditures and track closely with the respective level of inputs in each sector. It is also worth noting that although decommissioning expenditures will increase employment more than the closure of DCPP will decrease employment, we find that this is not consistent with output. This can be explained by the types of jobs lost and gained. Decommissioning expenditures will support more low-wage workers than DCPP, which is characterized by its high-wage workforce. Therefore, although more jobs will be produced in decommissioning than are lost in the closure of DCPP, we find that output increases less than it falls from the closure of DCPP.

We present results for the impact for state and local tax in Table 30. We find that decommissioning expenditures will have a significant tax benefit, most of which comes from sales, property, and income taxes. In total, decommissioning expenditures are projected to increase the tax base by \$45.5 million dollars annually. This completely offsets the lost taxes from the closure of DCPP, which includes the loss of the Unitary Property Tax.

Turning to impacts outside of San Luis Obispo, we find comparatively smaller impacts for Santa Barbara County and the rest of California. Since we assume decommissioning expenditures will be spent entirely within San Luis Obispo County, we only find indirect and induced effects outside the county. For Santa Barbara County, we find the majority of effects are indirect; in other words the primary economic impacts will be from supplying the decommissioning efforts. There are induced effects as well due to leakages from spending and the changes in household expenditures from the indirect effects. In total, output will increase by approximately \$24 million and employment by 147 jobs (Tables 31 and 32 respectively). We find minimal tax impacts in Table 33, with an overall increase of approximately \$1.4 million.

The rest of California sees a comparatively larger effect for decommissioning expenditures than it does for the closure of DCPP. This can be explained by a larger amount of intermediary goods and services needed outside the region to decommission DCPP than are required to operate the plant. We find that decommissioning expenditures will increase output in California by approximately \$132 million, add 690 jobs, and increase tax revenue by \$6.2 million (Tables 34, 35, and 36 respectively). Again, these

totals are very small compared to the overall size of the regional economy and should be considered in context.

Table 28: Total Economic Impact of Requested DCPP Decommissioning Expenditures, San Luis Obispo County (2016 Dollars Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$479,428,135	\$120,208,073	\$124,191,337	\$723,827,545
1	Waste management and remediation services	\$147,247,900	\$13,294,261	\$459,942	\$161,002,103
2	Construction of other new nonresidential structures	\$95,970,673	\$0	\$0	\$95,970,673
3	Electric power generation - Nuclear	\$94,281,154	\$18	\$16	\$94,281,187
4	Architectural, engineering, and related services	\$66,160,379	\$9,302,730	\$650,125	\$76,113,234
5	Investigation and security services	\$40,133,191	\$254,500	\$98,981	\$40,486,672
6	Real estate	\$1,554,300	\$10,929,476	\$10,724,941	\$23,208,716
7	Owner-occupied dwellings	\$0	\$0	\$21,038,333	\$21,038,333
8	Wholesale trade	\$4,824,194	\$7,494,648	\$4,673,660	\$16,992,504
9	Natural gas distribution	\$6,955,082	\$274,482	\$301,824	\$7,531,388
10	Petroleum refineries	\$0	\$6,190,262	\$1,167,862	\$7,358,124
Total all other categories		\$22,301,262	\$72,467,694	\$85,075,652	\$179,844,610

Table 29: Total FTE Jobs from Requested DCPP Decommissioning Expenditures, San Luis Obispo County (Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	3,041.96	913	983	4,938
1	Investigation and security services	1,002	6	2	1,011
2	Waste management and remediation services	655	59	2	716
3	Construction of other new nonresidential structures	694	0	0	694
4	Architectural, engineering, and related services	462	65	5	532
5	Real estate	10	69	68	147
6	Full-service restaurants	0	56	61	117
7	Wholesale trade	24	37	23	84
8	Electric power generation - Nuclear	79	0	0	79
9	Limited-service restaurants	0	15	54	70
10	Environmental and other technical consulting services	42	22	2	66
Total all other categories					

Table 30: State and Local Tax Impact of Requested DCPP Decommissioning Expenditures, San Luis Obispo County (2016 Dollars Annually for 10 years)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	\$62,635
Social Ins Tax- Employee Contribution	\$382,764	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	\$801,781	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	\$17,030,987	\$0	\$0
TOPI: Property Tax	\$0	\$0	\$15,119,796	\$0	\$0
TOPI: Vehicle License	\$0	\$0	\$330,247	\$0	\$0
TOPI: Severance Tax	\$0	\$0	\$15,582	\$0	\$0
TOPI: Other Taxes	\$0	\$0	\$1,537,556	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	\$202,232	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	\$1,116,949
Personal Income Tax	\$0	\$0	\$0	\$7,491,474	\$0
Personal Tax: NonTaxes (Fines- Fees	\$0	\$0	\$0	\$1,042,844	\$0
Personal Tax: Vehicle Licenseense	\$0	\$0	\$0	\$258,487	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	\$115,355	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	\$50,780	\$0
Total State and Local Tax	\$1,184,545	\$0	\$34,236,401	\$8,958,940	\$1,179,586

Table 31: Total Economic Impact of Requested DCPP Decommissioning Expenditures, Santa Barbara County (2016 Dollars Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$0	\$16,556,170	\$7,728,746	\$24,284,916
1	Wholesale trade	\$0	\$2,690,456	\$496,057	\$3,186,514
2	Real estate	\$0	\$1,674,052	\$1,129,914	\$2,803,966
3	Other local government enterprises	\$0	\$2,073,551	\$349,412	\$2,422,964
4	Scenic and sightseeing transportation and support activities for transportation	\$0	\$894,372	\$89,626	\$983,998
5	Office administrative services	\$0	\$655,213	\$101,508	\$756,721
6	Lessors of nonfinancial intangible assets	\$0	\$645,244	\$107,545	\$752,788
7	Extraction of natural gas and crude petroleum	\$0	\$582,384	\$85,625	\$668,008
8	Owner-occupied dwellings	\$0	\$0	\$639,917	\$639,917
9	Marketing research and all other miscellaneous professional, scientific, and technical services	\$0	\$442,262	\$46,854	\$489,116
10	Cable and other subscription programming	\$0	\$261,497	\$206,776	\$468,271
	Total all other categories	\$0	\$6,637,140	\$4,475,514	\$11,112,653

Table 32: Total Jobs from Requested DCPP Decommissioning Expenditures, Santa Barbara County (Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	0.00	96	51	147
1	Real estate	0	8	5	13
2	Wholesale trade	0	11	2	13
3	Office administrative services	0	8	1	9
4	Marketing research and all other miscellaneous professional, scientific, and technical services	0	7	1	8
5	Other local government enterprises	0	6	1	7
6	Scenic and sightseeing transportation and support activities for transportation	0	6	1	6
7	Employment services	0	4	1	6
8	Accounting, tax preparation, bookkeeping, and payroll services	0	4	1	5
9	Services to buildings	0	2	2	4
10	Full-service restaurants	0	1	2	3
	Total all other categories				

Table 33: State and Local Tax Impact of Requested DCPP Decommissioning Expenditures, Santa Barbara County (2016 Dollars Annually for 10 years)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	\$2,438
Social Ins Tax- Employee Contribution	\$12,670	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	\$26,540	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	\$453,714	\$0	\$0
TOPI: Property Tax	\$0	\$0	\$437,770	\$0	\$0
TOPI: Vehicle License	\$0	\$0	\$10,664	\$0	\$0
TOPI: Severance Tax	\$0	\$0	\$505	\$0	\$0
TOPI: Other Taxes	\$0	\$0	\$61,112	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	\$6,121	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	\$42,077
Personal Income Tax	\$0	\$0	\$0	\$268,768	\$0
Personal Tax: NonTaxes (Fines- Fees	\$0	\$0	\$0	\$37,648	\$0
Personal Tax: Vehicle Licenseense	\$0	\$0	\$0	\$9,239	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	\$3,683	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	\$1,828	\$0
Total State and Local Tax	\$39,210	\$0	\$969,886	\$321,166	\$44,515

Table 34: Total Economic Impact of Requested DCPP Decommissioning Expenditures, Rest of California (2016 Dollars Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$0	\$82,831,010	\$48,868,417	\$131,699,428
1	Employment services	\$0	\$7,589,992	\$1,546,670	\$9,136,662
2	Management of companies and enterprises	\$0	\$5,619,848	\$1,951,956	\$7,571,803
3	Wholesale trade	\$0	\$4,071,128	\$2,072,608	\$6,143,735
4	Real estate	\$0	\$1,616,756	\$2,559,731	\$4,176,487
5	Petroleum refineries	\$0	\$2,993,887	\$547,313	\$3,541,200
6	Owner-occupied dwellings	\$0	\$0	\$3,505,008	\$3,505,008
7	Wireless telecommunications carriers (except satellite)	\$0	\$2,332,012	\$1,108,472	\$3,440,484
8	Other basic inorganic chemical manufacturing	\$0	\$3,329,423	\$13,469	\$3,342,892
9	Legal services	\$0	\$2,131,314	\$964,210	\$3,095,524
10	Internet publishing and broadcasting and web search portals	\$0	\$2,121,264	\$818,546	\$2,939,810
	Total all other categories	\$0	\$51,025,387	\$33,780,436	\$84,805,822

Table 35: Total FTE Jobs from Requested DCPP Decommissioning Expenditures, Rest of California (Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	0.00	404	286	690
1	Employment services	0	92	19	111
2	Management of companies and enterprises	0	21	7	28
3	Wholesale trade	0	16	8	25
4	Investigation and security services	0	13	4	17
5	Warehousing and storage	0	9	6	16
6	Real estate	0	6	9	15
7	Other financial investment activities	0	4	10	15
8	Legal services	0	10	5	15
9	Full-service restaurants	0	4	11	14
10	Truck transportation	0	9	3	13
Total all other categories					

Table 36: State and Local Tax Impact of Requested DCPP Decommissioning Expenditures, Rest of California (Annually for 10 years)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	\$15,323
Social Ins Tax- Employee Contribution	\$79,112	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	\$165,716	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	\$1,891,418	\$0	\$0
TOPI: Property Tax	\$0	\$0	\$1,554,648	\$0	\$0
TOPI: Vehicle License	\$0	\$0	\$42,922	\$0	\$0
TOPI: Severance Tax	\$0	\$0	\$2,040	\$0	\$0
TOPI: Other Taxes	\$0	\$0	\$281,564	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	\$53,516	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	\$275,726
Personal Income Tax	\$0	\$0	\$0	\$1,517,028	\$0
Personal Tax: NonTaxes (Fines- Fees	\$0	\$0	\$0	\$250,156	\$0
Personal Tax: Vehicle Licenseense	\$0	\$0	\$0	\$51,984	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	\$18,264	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	\$10,300	\$0
Total State and Local Tax	\$244,829	\$0	\$3,826,110	\$1,847,731	\$291,049

1.3.5 Discussion

Our results demonstrate that the closure of DCPP and related decommissioning will present both positive and negative economic impacts. On one hand, the closure of DCPP will see the loss of employment and expenditures associated with the plant and this negative outcome is expected to decrease output by some \$820 million annually in San Luis Obispo and Santa Barbara Counties. This finding is in line with previous work that has estimated that DCPP is responsible for \$920 million in local output (Mayeda and Riener 2013).

On the other hand, DCPP will not close in a vacuum. The plant will not immediately shut down, with all employees immediately leaving the region. Although we are unable to estimate the total number of employees who are expected to stay, we can assume our estimate presents the upper bound of what the overall negative economic impact will be. Furthermore, there are positive economic impacts to consider both before and after the plant closes. Before the plant closes there is funding from SB1090 and D.18-01-022, which will see output increase by at least \$40 million for the nine years proceeding closure, with output rising to \$53 million when the EDF is capitalized. After the plant closes and the bulk of decommissioning expenditures begin, we find an expected increase in local output of roughly \$724 million. In other words, upon closure the net effect will be a roughly \$77 million decrease in output annually.

There are some caveats with our findings. First, our assumption around the timing of decommissioning funds drives the overall size of the effect. That is, if we assume a shorter timeline or a longer timeline our effect would either increase or decrease respectively.² Second, we should note that the negative economic impacts from plant closure will exist in perpetuity while the decommissioning expenditures are finite.

Despite these caveats, our findings provide a useful benchmark in gauging the overall size of the impact. While previous work has only highlighted either the negative or positive impacts of nuclear plant closure and decommissioning, our study is the first analysis to incorporate both negative and positive effects. This is important as taken together, the loss of approximately \$77 million is far less than the nearly \$1 billion as estimated previously (Mayeda and Riener 2013).

Comparing the size of this effect to both San Luis Obispo's regional economy and growth is important to ascertain how meaningful the closure of DCPP will be for the community. The 2016 gross regional product of San Luis Obispo was approximately \$13.3 billion dollars, meaning the net impact could see economic growth fall by roughly 0.58%. For

² We could also assume a non-linear effect, which is more likely to reflect how actual funds will be utilized. As previously mentioned we assume a linear effect to allow more useful comparison of net effects.

further context, the San Luis Obispo MSA grew on average by a rate of 4.5% from 2001 to 2017, meaning overall economic growth in the region will still be positive, albeit at a lower rate (BEA 2018).

Turning to Santa Barbara County, we largely find that the closure of DCPP will have a limited net effect. This intuitively makes sense as only 132 employees are located in Santa Barbara county and the primary effects will be through impacts to household expenditures. Although no direct SB1090 funds or decommissioning expenditures will be spent in Santa Barbara County, there will be indirect and induced effects through suppliers and spending leakages. Therefore, while closure of DCPP will result in a reduction in output of some \$22 million annually, we find the decommissioning expenditures will increase output by approximately the same size (\$24 million). Even disregarding the decommissioning expenditures, the loss of \$22 million in output is relatively insignificant given the size of Santa Barbara County's economy: in 2016 the gross regional product was approximately \$25 billion meaning the closure of DCPP will decrease gross regional product by less than 0.1%.

For the rest of California, the overall size of the effect will be even smaller and for all intents and purposes can be considered as having no effect. We find that the closure of DCPP will decrease output by \$38 million annually, while decommissioning expenditures will increase output by \$132 million. While the overall impact might be net positive for a period of time, this difference is trivial given the size of the rest of California's economy estimated at \$2.5 trillion in 2016. Therefore, even a net gain in output of \$94 million would represent only 0.004% of gross regional product.

1.4 Conclusions

Generally, we find that the closure of DCPP and related decommissioning will present both positive and negative direct impacts to the SLO economy. On one hand, the closure of DCPP will see the loss of employment and expenditures associated with the plant and this negative outcome is expected to decrease economic activity by some \$801 million annually in San Luis Obispo County.

On the other hand, DCPP will not close in a vacuum. The plant will not immediately shut down, with all employees immediately leaving the region. Although we are not able to estimate the total number of employees who can be expected to stay, we can assume our estimate presents a most conservative bound on what the overall negative economic impact will be. Furthermore, there are positive economic impacts to consider both before and after the plant closes. Before the plant closes, there is funding from SB 1090 and D.18-01-022, which will see output increase by at least \$40 million for the seven years preceding closure, with output rising to \$53 million when the Economic Development

Fund (EDF) is capitalized. After the plant closes and the bulk of decommissioning expenditures begin, we estimate that local output can be expected to increase by roughly \$724 million. Our main macroeconomic impacts are summarized below for San Luis Obispo County.

- **Impact 1: SB1090 and D.18-01-022 – Positive Shock (Pre-Closure)**
 - Increase in economic output of \$40 million per year for seven years, with a supplemental \$13 million increase for one year when EDF funds are capitalized.
 - Increase in approximately 349 FTE jobs annually for seven years. EDF adds an additional 87 FTE jobs when funds are capitalized.
- **Impact 2: DCPP Closure – Negative Shock (Post-Closure)**
 - Decrease in economic output of \$801 million. The majority of losses occur as direct effects within the nuclear sector with a \$600 million reduction in output.
 - Decrease of approximately 2,908 FTE jobs, the majority of which are from direct employment from DCPP.
- **Impact 3: DCPP Decommissioning Expenditures – Positive Shock (Post-Closure)**
 - Increase in economic output of \$724 million per year for ten years.
 - Increase of approximately 4,938 FTE jobs annually for ten years.

Our research finds a much smaller net effect than previous estimates for DCPP closure. Whereas previous studies have only considered the negative impacts, we also consider how decommissioning expenditures will offset some of the negative economic losses when the plant closes. Assuming that decommissioning expenditures are distributed evenly across ten years, we find a net economic loss of roughly \$77 million annually. This impact is far less than previous estimates which have placed losses in the range of \$1 billion, or 13 times our estimate. It is also important to place the size of any DCPP impact in context with the size San Luis Obispo's regional economy and growth. Although the closure will result in meaningful economic losses, overall economic growth in the region will still be positive, although perhaps at a lower rate: losses of \$77 million in net economic activity correspond to approximately 0.58% of gross regional product, well below historical growth rates.



2 Local Stakeholder Consultation

2.1 Approach

At the request of CPUC, UC Berkeley engaged nine key stakeholders to discuss issues they identified as important related to the closure of DCPP. Topics considered included fiscal impacts, economic expenditure impacts, ability to adapt, and other economic and financial factors of special concern to local stakeholders in the context of DCPP closure. These discussions were conducted during two visits by the UC Berkeley team, on September 21st, 2018 and October 12th, 2018.

The following individuals and organizations were interviewed:

- Andrea Lueker, Harbor Manager, Port of San Luis
- Melissa James, SLO Chamber of Commerce
- Loreli Cappel and Mike Manchak, Economic Vitality Corporation
- Wade Horton, County Administrative Officer, San Luis Obispo County
- Derek Johnson, City Manager, City of San Luis Obispo
- Rachelle Rickard, City Manager, City of Atascadero
- James Lewis, City Manager, City of Pismo Beach
- David Weisman and Rochelle Becker, Alliance for Nuclear Responsibility
- Eric Prater and Ryan Pinkerton, Superintendent, San Luis Unified School District

2.2 Results

Six leading themes emerged from our discussions. Each of these would be good candidates for more dedicated policy research and dialog.

2.2.1 Fiscal challenges for county and city managers:

The key fiscal concern is the loss of tax revenue from the unitary property tax paid by PG&E on the land and assets at DCPP. SB 1090 helps alleviate some of the concern in the short-run (pre-closure) but concerns remain about the fiscal gap post-closure. The concern was most pronounced for the county government although in-depth fiscal planning has already begun.

2.2.2 Local Community Expenditure Concerns:

With the DCPP closure and associated loss of a number of high-income jobs, there is likely to be a reduction in discretionary spending in the surrounding community. What will be the impact on the single high-end grocer and/or the mid- to high-tier restaurants? Given how small the community is, there are concerns that the loss of revenue for the specialty business could have an outsized impact on the community. These concerns are not just related to full-time DCPP employees but to the influx of seasonal employees who come during refueling outages. These employees typically come during the tourism offseason and are an important source of spending during that time.

2.2.3 Perceptions of regional variation in ability to adapt to the closure:

The average household income for San Luis Obispo county is approximately \$65,000 and the average salary for a DCPP employee is approximately \$150,000. These DCPP workers are quite spread out across the county in terms of where they live. There is concern in certain regions (north county in particular) that losing these residents will have a large negative expenditure effect in smaller communities. In the city of SLO, this seemed to be less of a concern because the economy is much more diversified and less reliant on these DCPP employees.

2.2.4 Discussion of how to adapt the local economy post-closure:

The point was made several times that employment in the county of San Luis Obispo is largely supported by government agencies and DCPP. Several stakeholders expressed concern about the loss of high-income earners currently employed at DCPP. There is a feeling that new economic development opportunities must be aggressively pursued in order to diversify the economy and attract new businesses, particularly ones that support

a high-skilled labor force. 90% of Cal Poly graduates leave the area because there is no demand in the local labor market.

2.2.5 Housing crisis and affordability gap:

The affordability gap between average household income and the rising cost of housing is clearly a concern. Permitting for new residential construction can be restrictive and several stakeholders felt that this would be a critical barrier to diversifying the economy post-closure. Little concern was expressed that DCPP would have any impact on the housing crisis. Much like the rest of California, the SLO area is in a housing crisis, with rising home prices unaffordable to much of the population. There has been an influx of capital from greater Los Angeles and the Bay Area as either investments or retirees. With restrictive zoning, NIMBYism, and expensive land costs, there is limited new home construction. The city of SLO has several new developments of single-family homes, but these are in the \$700k-\$800k range and are targeted at out-of-region capital. Those who work in the service sector or government are unable to afford homes, and the closure of DCPP will not affect this. SLO county is a middle-income county with upper-middle income home prices. Therefore, although the SLO unified school district is losing an important source of tax when DCPP closes, the district is more concerned about declining student enrollment and recruiting staff than the loss of tax revenue. Given the expensive housing market and lack of high-income jobs, they have seen families leave the city, and new families hesitant (or unable to move in). Furthermore, hiring and retaining staff remains a challenge.

2.2.6 The Impact to community not reflected in economic numbers:

There was significant concern about who DCPP employees are and what they mean for the local community. DCPP employees hold head of household jobs that cannot be easily replaced with service sector or government jobs. DCPP employees are those who donate to local schools, volunteer, or serve in other leadership roles. Will the fabric of the community, especially in bedroom communities, start to disappear as the DCPP jobs leave?

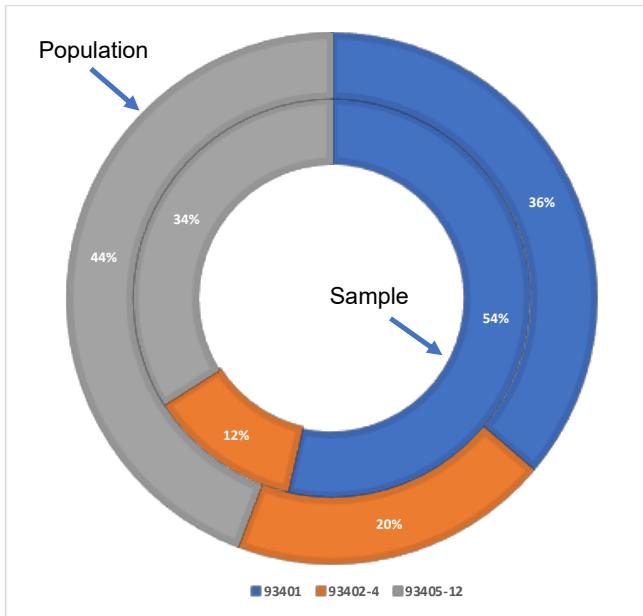
3 Local Stakeholder Survey



During the course of significant policy dialogs, some stakeholder groups are more likely to represent their interests than others. Generally, agencies for whom a policy has more immediate responsibility will be leading contributors to the dialog, especially in a place like California with high standards for official transparency. On the private side, more vocal stakeholders are likely to be regulated entities, enterprises with direct economic interests, and individuals and non-governmental organizations with salient interests in the policy at hand. The dialog on DCPP closure has been quite typical in this sense, and most of the stakeholder engagement on this has been dominated by these voices.

For the present assessment, we have sought to more inclusively assess local community perceptions of the economic implications of DCPP closure. This was done by conducting an online survey using a randomized sample of SLO stakeholders obtained from Dunn and Bradstreet. Our sample consisted of 239 respondents, representing a diverse community of enterprises, NGOs, and local public agencies (including education). Because of time and budget constraints, we did not study individual households, leading to under-sampling in more residential areas (Figure 1). We do believe, however, that a household survey would be a useful extension of our approach.

**Figure 1: Stakeholder Population and Survey Sample:
Percent Shares by ZIP Code**



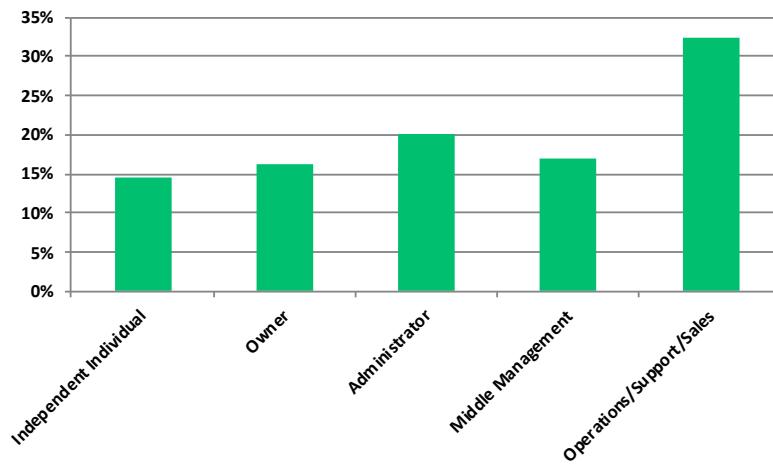
3.1 Methods and Data

As indicated above, this was an online survey reaching a randomized local sample constructed for this purpose by Dunn and Bradstreet. The sample ultimately comprised 239 respondents representing three SLO local stakeholder groups, summarized in Table 1. Although we asked a variety of questions that would identify functional characteristics of the respondent's institution, we guaranteed non-disclosure of names, locations (beyond ZIP code), and affiliations. Respondents came from diverse positions in their organizations and responded independently (Figure 1).

Table 37: Survey Sample by Type of Stakeholder

Answer	Percent
Private Enterprise	31
Non-Governmental Organization	13
Public Agency / Education	56
	100

Figure 2: Respondent Self-identification



The survey itself consisted of 42 questions, some divided by stakeholder groups, and was distributed by email with online access provided by SurveyMonkey.com. The responses were only tabulated, and not subjected to other statistical methods. Questions were developed in three categories:

- Basic Information – functional attributes of respondents and their institutions
- General Economic Outlook – expectations and sentiment regarding individually relevant trends in the SLO economy.
- Perspectives on DCPP Closure – sentiment and opinion regarding prospective closure, attendant policies, and policy dialog

In the following sub-section, we discuss general and specific findings of the survey. We relied on research literature on survey design (see e.g. Choi and Varian: 2012, Taylor and McNabb: 2007, Pesaran and Weale: 2006) for our questions regarding expectations and sentiment. Generally speaking, respondents were asked to self-identify their organizational type (Enterprise, NGO, Public Admin) and they consider structured questions of immediate relevance to the economics of DCPP closure. The use of structured questions to rank expectations and sentiment is generally best for standardizing responses and reducing uncertainties associated with individual written expression. Across such a diverse community, and without the resources for intensive individual interviews, this was determined to be the most practical survey approach.

The basic approach works as follows: present the respondent with a structured statement or quote and ask them to rank their level of agreement/sentiment according to a small number of alternative responses; the results are then tabulated to indicate the scope and

salience of the different answers. In each case below, we explain the alternatives presented to the respondent and summarize the relevant survey results.

3.1.1 General Economic Outlook

Expectations and sentiment regarding economic trends are based on individual/institutional experience, attention to relevant local and other evidence, and a respondent's personal opinions. While it can be difficult to disentangle these at times, the present survey offers relatively clear indications of general optimism regarding recent experience and expectations about SLO's local economy. There is also significant agreement about systemic sources of risk and uncertainty. While these need to be taken seriously, they reflect broader concerns in California's more prosperous coastal communities.

For example, the Enterprise group was asked about how their individual business conditions today compared to one year ago and five years ago. As Table 38 and Table 39 indicate, expanding local firms were more than twice as common as firms experiencing contraction.

Table 38: Percent of Firms Reporting Business Expansion Compared to 1 and 5 Years Ago

Category	1-Year Horizon	5-Year Horizon
Employment	39%	55%
New Orders	47%	66%
Dollar Sales / Earnings	50%	61%

Table 39: Percent of Firms Reporting Business Decline Compared to 1 and 5 Years Ago

Category	1-Year Horizon	5-Year Horizon
Employment	18%	27%
New Orders	19%	19%
Dollar Sales / Earnings	16%	29%

In addition to direct experience, we asked stakeholders to respond to structured statements about local economic sentiment. More detailed responses are presented later, but the general reactions are summarized for each of the three stakeholder groups in Table 40. With these sentiment rankings, individual respondents assigned a score that corresponded to their degree of agreement with each structured statement. Acceptable responses were: Agree (4), Somewhat agree (3), Neither agree nor disagree (2), Somewhat disagree (1), or Disagree (0). Thus entries in Table 40 indicate the percentage of all respondents, for each statement and stakeholder type, who rank the statement as 4 or 3.

Several statements are affirmed by a significant majority within and even across stakeholder groups, and this insight applies to both optimistic and pessimistic statements. Local affordability challenges, particularly in the real estate market, command the highest and most consistent agreement. A consistent, but lesser majority of stakeholders agree about the robustness and vibrance of SLO's local economy. This confirms the positive enterprise experience cited above, but even more emphatically for NGOs and public sector interests.

Table 40: Percent of the Sample in Agreement with Each Statement, by Stakeholder Group

Statement	Percent in Agreement		
	Business	NGO	PubAdm
"San Luis Obispo County has a robust, vibrant economy."	50%	53%	58%
"Housing prices are having a negative impact on the local economy."	75%	87%	80%
"Marketing to and attraction of job candidates is a persistent challenge in the county."	81%	80%	72%
"Economic anchors like DCPP or CalPoly benefit the economy, but also allow county residents to be complacent about long-term challenges to promote economic growth and diversification."	71%	80%	63%
"San Luis Obispo County suffers from a persistent 'affordability gap' between wages and housing costs."	94%	93%	90%

The percentages in Table 40 indicate qualitative responses to the statements, categorical agreement or disagreement. A slightly difference approach to sentiment measures the degree of these sentiments, using weighted average scores to more accurately reflect the intensity of confidence or other sentiments articulated in the statements. This approach

is more common in modern business and political cycle analysis, where degrees of conviction are important to identify priorities, momentum, and potential turning points. As can be seen by comparing Table 40 and Table 41, both agreement and conviction are quite strong for the cost of living risk statements, but opinion is more divided on the more complex statements about economic robustness and complacency.

Table 41: Average Ranking of Agreement on Each Statement, by Stakeholder Group

Statement	Weighted Average		
	Business	NGO	PubAdm
"San Luis Obispo County has a robust, vibrant economy."	2.3	2.2	2.5
"Housing prices are having a negative impact on the local economy."	3.2	3.4	3.3
"Marketing to and attraction of job candidates is a persistent challenge in the county."	3.2	3.4	3.0
"Economic anchors like DCPP or CalPoly benefit the economy, but also allow county residents to be complacent about long-term challenges to promote economic growth and diversification."	2.8	2.9	2.7
"San Luis Obispo County suffers from a persistent 'affordability gap' between wages and housing costs."	3.7	3.7	3.7

Note: Ranking are average scores for each statement and stakeholder type.

Table 42: Sentiment Ranking for the Economic Impacts of DCPP Closure on Private Enterprises

	Very Important Score=3	Somewhat Important Score=2	Not Important Score=1	Weighted Average Score=0
Business Environment	53%	27%	20%	2.3
Labor Availability	43%	43%	13%	2.3
Material Costs	20%	50%	30%	1.9
Labor Costs	23%	60%	17%	2.1
Utility Costs	50%	33%	17%	2.3
Rental Rates	47%	33%	20%	2.3
Property Values	57%	30%	13%	2.4
Public Goods and Services	21%	55%	24%	2.0

On the issue of DCPP closure, the enterprises in our sample showed a strong majority opinion that closure would be "Important" to business operating conditions. Since the

results of our assessment basically contradict most of these sentiments, better information on the complex and offsetting impacts of closure can offer important support to SLO enterprise expectations.

Table 43 compares expectations across all three stakeholder types. A number of salient insights emerge from these results. Firstly, the enterprise community is much less pessimistic than NGOs and public institutions. In part, their generally positive experience over the last five years likely contributes to a feeling of resilience. Although few businesses responded “Better”, it is important to recall that this question asked about the specific impact of DCPP on their operations. Most clearly feel they will not be affected or might even be better off. NGO’s are more polarized, with the largest percentages of both pessimists and optimists. It would be useful to identify the factors contributing to these polarized sentiments because they could complicate orderly policy dialog and even necessary institutional adjustments. Of course, this can’t be done with the present sample because the identities of respondents are confidential. Results for public institutions (most pessimistic, least optimistic) are not unexpected, as they have the strongest bond to the status quo and are primary beneficiaries of revenues specifically committed from DCPP. Once again, we hope this group can benefit from the findings of the present study, indicating that adverse economic impacts attributable to closure will be much smaller than is anticipated by some, and that private markets seem to significantly discount pessimism about the SLO property market and public sector financial integrity.

Table 43: Following DCPP closure, do you expect your Institution to fare better, worse, or stay the same?

Respondent	Percent		
	Better	Same	Worse
Private Businesses	7%	77%	17%
Non-governmental Organizations	17%	50%	33%
Public administration / government	3%	50%	47%

Although there are clear disparities between public and private sector expectations regarding closure impacts, there is remarkable agreement about what issues are most important for the local economy. As Table 44 and Table 45 clearly indicate, Enterprises, NGOs, and Public Agencies generally agree on the higher priority risks and rewards that are subject to economic uncertainty. Taking these results, discordant expectations over shared values, makes a very compelling case for determined and expanded commitments to ongoing policy dialog. We already know that SLO governments are pursuing this with dedicated (SB1090) and other funds, including the new Hourglass Project. We can only

hope the evidence presented here will support more robust and constructive engagement to mobilize local institutions.

Table 44: What are Your Primary Concerns About DCPP Closure

Percent “Very Important”			
Statement	Business	NGO	PubAdmin
Economic uncertainty	73%	50%	66%
Loss of tax revenue	70%	73%	81%
Loss of jobs	72%	78%	72%
Emigration	21%	20%	23%
Electricity costs	47%	45%	44%
Change in real estate values	43%	44%	43%

Table 45: Score Your Primary Concerns About DCPP Closure

Weighted Average (0 to 3)			
Statement	Business	NGO	PubAdmin
Economic uncertainty	2.7	2.4	2.6
Loss of tax revenue	2.6	2.6	2.8
Loss of jobs	2.6	2.8	2.7
Emigration	1.8	2.0	1.9
Electricity costs	2.2	2.5	2.2
Change in real estate values	2.4	2.3	2.3

Assuming this recommendation is taken to heart, an unintended but essential benefit of DCPP closure could be a new generation of multi-stakeholder commitment to sustainable and inclusive growth across the SLO economy. Shared values will provide welcome cohesion, while discordant expectations can stimulate constructive discourse, develop more evidence, and motivate the community to improve mutual awareness. To facilitate this, our survey also sought to identify leading concerns and opinions about DCCPP. These hallmark issues could be used to jump start and sustain a forward-looking dialog for community strategic planning.

Table 46: Do You Agree or Disagree with the Following Statements?

Statement	Percent Agreeing		
	Business	NGO	PubAdm
"The loss of workers from the power plant will have a severe negative impact on the local economy."	73%	75%	78%
"The County is embedded in a diversified and robust regional economy. Decommissioning will create opportunities for modernization and skill-intensive growth."	30%	25%	40%
"Government services such as schools or public transit will be severely impacted by the loss of tax revenue."	90%	67%	86%
"PG&E employees are active community members, losing them would have a substantial negative impact on the community."	80%	83%	75%
"Heavy vehicle traffic from decommissioning will have a significant detrimental impact on local roads and economic activity."	37%	42%	38%

Table 47: Rank the Importance to you of Following Statements

Statement	Weighted Average (0 to 4)		
	Business	NGO	PubAdm
"The loss of workers from the power plant will have a severe negative impact on the local economy."	2.9	3.08	3
"The County is embedded in a diversified and robust regional economy. Decommissioning will create opportunities for modernization and skill-intensive growth."	1.5	1.75	2.02
"Government services such as schools or public transit will be severely impacted by the loss of tax revenue."	3.3	3.08	3.42
"PG&E employees are active community members, losing them would have a substantial negative impact on the community."	3.17	3.17	2.98
"Heavy vehicle traffic from decommissioning will have a significant detrimental impact on local roads and economic activity."	1.9	2.33	2.23

The tables above present the survey findings on salient issues, by stakeholder type, measuring degree of relevance (

Table 46) and conviction (Table 47). Here we consider only five among a very long agenda of issues, but these were consistently deemed central to current discussions of closure impacts. Addressing them first will help establish standards for more ambitious community strategic dialog.

3.1.2 SB 1090 Awareness

On September 19, 2018, then-Governor Jerry Brown signed Senate Bill No. 1090, directing the California Public Utilities Commission to approve a settlement which includes \$85 million to mitigate the impacts of the closure (\$75 million distributed among local governments and \$10 million to be spent on economic development). The majority of survey respondents were aware of this bill (Table 48), and we asked all to consider a set of seven alternative (but not mutually exclusive) uses of these funds in SLO County.

Table 48: Prior to taking this Survey, were You Aware of SB 1090?

Response	Percent		
	Business	NGO	Pub Admin
Aware	75	50	79
Not Aware	25	50	21

Table 49: Do You Agree with the Following Possible Uses of SB 1090 Funds?

Statement	Percent Agree		
	Business	NGO	Pub Admin
Job training programs for local workers	62%	83%	71%
Marketing and recruitment of new workers and their families	37%	75%	48%
Marketing and recruitment of new businesses	72%	75%	68%
Retention programs for graduates of CalPoly SLO and Cuesta College	43%	50%	62%
Investment incentives for technology clusters	70%	67%	68%
Infrastructure investment (roads, public transit, etc.)	76%	83%	89%
Budgetary adjustment assistance for local governments	34%	58%	68%

Table 50: How would You Score the Following Possible Uses of SB 1090 Funds?

Statement	Weighted Average (0 to 4)		
	Business	NGO	Pub Admin
Job training programs for local workers	2.7	3.3	2.9
Marketing and recruitment of new workers and their families	1.9	3.0	2.3
Marketing and recruitment of new businesses	2.9	3.1	2.9
Retention programs for graduates of CalPoly SLO and Cuesta College	2.4	2.2	2.7
Investment incentives for technology clusters	2.9	2.7	2.9
Infrastructure investment (roads, public transit, etc.)	3.0	3.3	3.3
Budgetary adjustment assistance for local governments	1.7	2.7	3.0

3.1.3 Engagement Panel Awareness and Recommendations

After announcing the closure, PG&E convened the Diablo Canyon Decommissioning Engagement Panel "to foster open and transparent dialogue between members of the local community and PG&E". Since its creation, the panel has held public meetings and workshops, conducted tours of Diablo Canyon lands, and published recommendations as to the decommissioning process. Regardless of their prior awareness of the Panel, we wanted to poll the survey's respondents on its recommendations

Table 51: Respondent Awareness

	Sample Share
I participated in the panel's activities	3%
I was aware of the panel but did not participate	57%
I was not aware of the panel	40%



Table 52: Do you Agree or Disagree with the Following Recommendations of the DCPP Engagement Panel?

Statement	Percent Agreeing		
	Business	NGO	Pub Admin
The decommissioning (decontamination) process should begin immediately upon shutdown with a goal of 10 years for completion of radiological decommissioning and decontamination, avoiding SAFSTOR (which allows up to 60-year delay in decontamination)	66%	82%	68%
The health and safety of the community and the environmental quality of the area should be the primary consideration when evaluating cost-effective methods of decommissioning in order to save ratepayers money	72%	82%	92%
The 12,000 acres that surround the DCPP are a spectacular natural resource and need to be conserved in perpetuity while allowing for managed public access and use	62%	82%	87%
The repurposing of facilities should be explored as a way to both reduce the amount of demolition materials created and create opportunities for new local jobs and economic development while considering public safety, traffic concerns and the environmental quality of the region	79%	82%	84%
The engagement panel should be in a form that would lead to the best possible recommendations on achieving a safe and effective decommissioning of the DCPP, including the disposition of Diablo Canyon Lands and Facilities	66%	82%	92%



Table 53: Please Score the Following Recommendations in Your Own Order of Importance

Statement	Weighted Average (0 to 4)		
	Business	NGO	Pub Admin
The decommissioning (decontamination) process should begin immediately upon shutdown with a goal of 10 years for completion of radiological decommissioning and decontamination, avoiding SAFSTOR (which allows up to 60-year delay in decontamination)	2.9	3.3	3.1
The health and safety of the community and the environmental quality of the area should be the primary consideration when evaluating cost-effective methods of decommissioning in order to save ratepayers money	3.1	3.2	3.7
The 12,000 acres that surround the DCPP are a spectacular natural resource and need to be conserved in perpetuity while allowing for managed public access and use	2.5	3.3	3.4
The repurposing of facilities should be explored as a way to both reduce the amount of demolition materials created and create opportunities for new local jobs and economic development while considering public safety, traffic concerns and the environmental quality of the region	3.2	3.2	3.3
The engagement panel should be in a form that would lead to the best possible recommendations on achieving a safe and effective decommissioning of the DCPP, including the disposition of Diablo Canyon Lands and Facilities	3.0	3.2	3.6

3.1.4 Detailed Sentiment Results

Figure 3: Enterprise Sentiment Regarding Statements about the SLO Economy

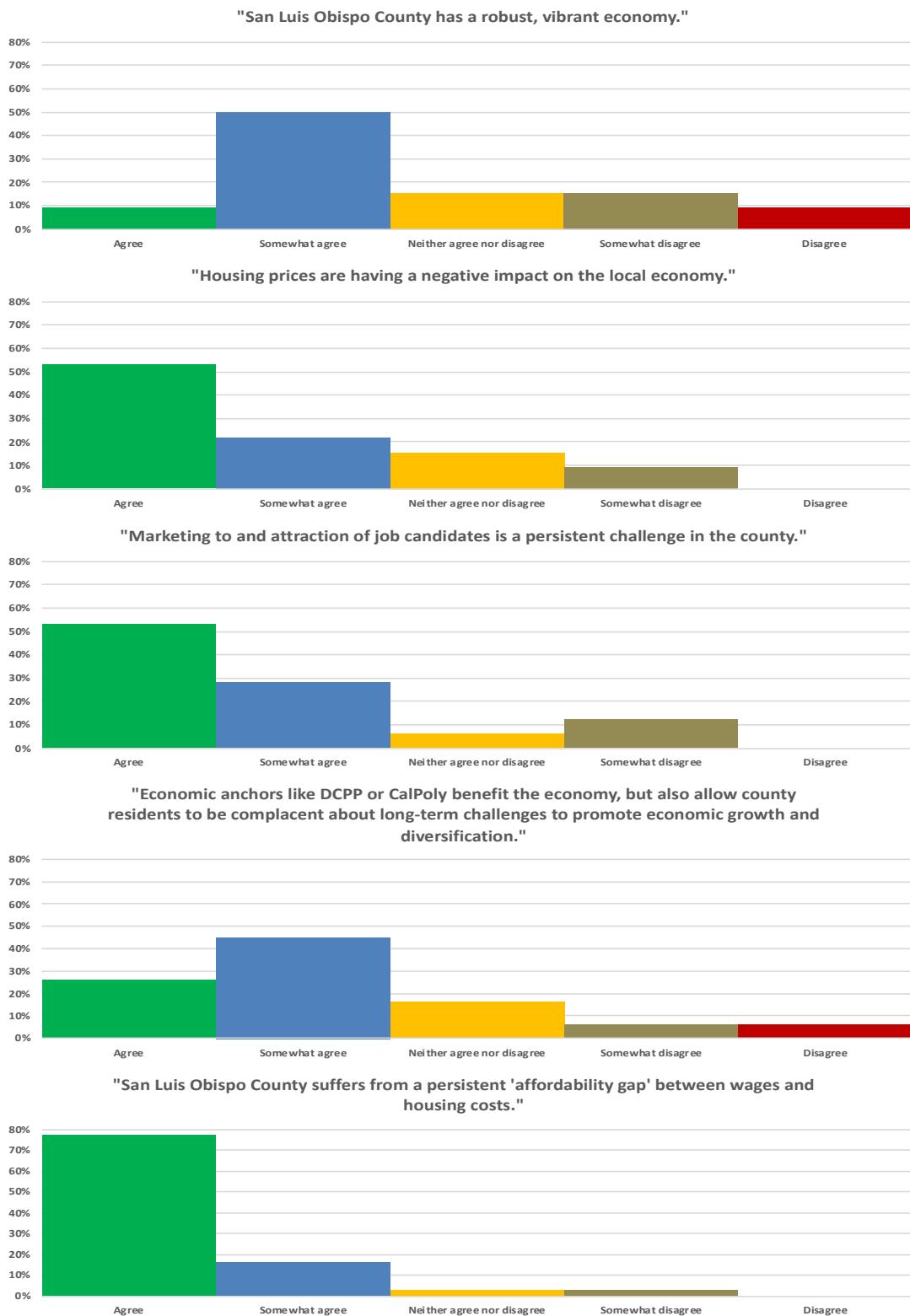


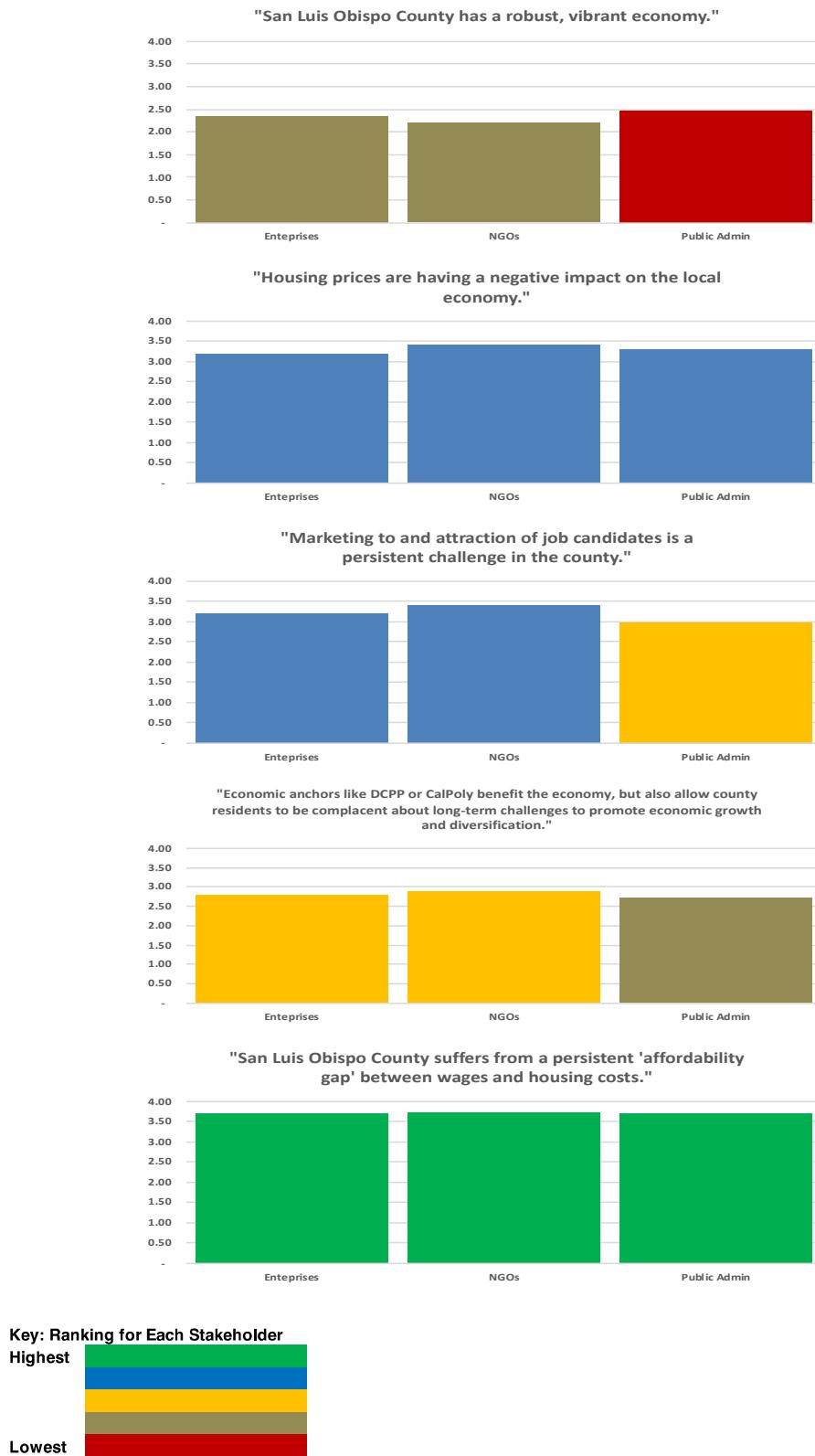
Figure 4: NGO Sentiment Regarding Statements about the SLO Economy



Figure 5: Public Agency Sentiment on Statements about the SLO Economy



Figure 6: Stakeholder Scoring/Conviction on SLO Economy Issues



4 Real Estate Market Assessment

4.1 Approach

The impact of the DCPP closure on real estate values has been a frequently expressed concern across the spectrum SLO public and private stakeholders. To elucidate the significance of this risk, we made use of a newly-available database of historical housing data from Zillow. Using this highly disaggregated and timely data, we constructed a profile of the housing market in San Luis Obispo County over recent decades, using it to econometrically analyze the impact of the DCPP closure announcement on local housing prices. For comparison, we also looked at the closure of SONGS.

One of the chief concerns of San Luis Obispo County residents is the impact of the Diablo Canyon Power Plant (DCPP) closure on the local housing market. The power plant represents some 1500 well-paying jobs, and its closure could result in the departure of many of these employees and cause some downward pressure on home prices in the county by increasing the supply of homes on the market, removing higher-income potential future buyers, and reducing overall economic activity. It is almost certain that this downward pressure will happen, but the question is whether or not such a closure would have a great enough magnitude to cause significant or lasting changes to the housing market.

To answer this question, we want to look for any event effect associated with the Diablo Canyon closure and other similar instances. In the Diablo Canyon case, this would be looking for signs of speculative price changes in the local housing market in response to the June 2017 closure announcement. In the comparison cases, most notably with the closure of the SONGS in 2013, we would look for proven price changes after the closure. To find (or not find) these event effects, we will use two types of analysis: (1) an event study comparing predicted mean housing prices to observed mean housing prices and (2) a difference-in-differences analysis looking for a specific event effect at the announcement or closure.

Before that, however, we note that the San Luis Obispo County housing market is generally agreed to be robust, with steady growth that has recovered from the 2008 collapse of the subprime mortgage housing bubble, surpassing its pre-2008 high of home prices around 2015-2016, with the exact date varying. This can all be seen in Figures 1 and 2. Homes closer to the power plant experience higher average sales prices, likely because of the power plant's own oceanside location.

4.2 Methods and Data

In addition to DCPP and SONGS, we analyzed three national comparison cases: Kewaunee Power Station (KPS) in Wisconsin, Fort Calhoun Nuclear Generating Station (FCNGS) in Nebraska, and Vermont Yankee Nuclear Power Plant (VYNPP) in Vermont. These nuclear plants were chosen for comparison since they closed in the last decade for economic reasons and with significant lead-up time between announcement and closure (unlike, SONGS which closed due to an accident and had only five days between announcement and closure).

In each of these comparison cases, the geographic areas analyzed included the immediate county in which the power plant was located, any adjacent counties, and the constituent counties of any adjacent metropolitan statistical area. For example, with FCNGS we used the counties of Washington, NE (the immediate county); Burt, NE; Douglas, NE; Dodge, NE; Harrison, IA; Pottawattamie, IA (the adjacent counties); Cass, NE; Sarpy, NE; Saunders, NE; and Mills, IA (the metropolitan counties). A full listing of these geographies is included in Table 54.

The housing data is taken from the Zillow Transaction and Assessment Database, or ZTRAX, an extensive database of housing transactions from the 1970s to 2017. This analysis only uses sales transactions, excluding mortgage transfers, inheritances, etc. The dependent variables analyzed are Sales Prices, Price per Square Foot, Price per Bedroom, and Sales Prices of Two Bedrooms. The database provides geographic data such as address and coordinates used to geographically locate each transaction.

For each transaction in our analyzed geographic areas, we also produced distances between the transacted property and the power plant of interest, using the associated latitude/longitude data and great-circle distance measurement.

For the difference-in-differences, the control variables are taken from the same database: square footage, number of bedrooms, age of the house, and categorical variables for zip code and year of the transaction.

For the event study, the predicted values are produced using the non-seasonally adjusted figures for the Federal Housing Finance Agency's Purchase Only House Price Index. For each instance, we produced predictions for the House Price Index for the United States and for the corresponding census divisions. The corresponding census divisions for each power plant are listed in Table 54.

4.2.1 Event Study

For the purposes of the event study, the predicted values are produced using a simple regression of monthly mean dependent variables on the House Price Index:

$$\text{Mean Housing Price}_{it} = \beta_0 + \beta_1 \text{House Price Index}_t + \varepsilon_{it}$$

These regressions were produced with an estimation window of 60 months (i.e. 5 years) beginning 65 months before the event. We then use these regressions to create predicted values for all our observed monthly means before taking the difference between the observed and predicted values, which is the deviation value.

To interpret the deviation, take, for example, the San Luis Obispo County housing market compared to the national market. A positive deviation at any given time indicates that the San Luis Obispo County housing market is experiencing mean home prices higher than one would expect given the national market and the recent historical relationship between the two. A negative deviation would indicate the opposite. We would expect this deviation to maintain itself around zero, with some constant fluctuation around that point. These deviations are adjusted for means (most CA market averages are much higher than their national counterparts) and bounded by standard errors produced with the predictions.

4.2.2 Difference-in-Differences

The difference-in-differences (DiD) analysis is built around a simple hedonic regression of home sales prices on different property characteristics from the ZTRAX data: square footage, number of bedrooms, age of the property, as well as indicators of the property's zip code and the year of the transaction. The treatment variables used are distance from the power plant being analyzed, a pre-post indicator variable for whether the transaction occurred after the closure or announcement, and an interaction variable between the two.

$$\begin{aligned} \text{Sales Price}_{it} = & \beta_0 + \beta_1 \text{Distance}_i + \beta_2 \text{After Closure}_i + \beta_3 \text{Distance}_i * \text{After Closure}_i \\ & + \gamma \text{Controls}_i + \sum_{k=1}^n \delta_k \text{Zip Code Indicator}_{ki} \\ & + \sum_{l=1}^m \delta_l \text{Transaction Year Indicator}_{lt} + \varepsilon_{it} \end{aligned}$$

Thus, the coefficient of interest for the event effect would be the coefficient on the interaction variable (β_3 in the above equation). To interpret this, a positive coefficient indicates that, after the closure, each additional mile away from the reactor is associated with an increase in expected home prices equal in magnitude to the sum of the coefficient

on the distance variable (β_1) and the coefficient of interest. The opposite is also true for negative coefficients. Thus, an announcement/closure effect involving an increase in prices would exhibit a negative coefficient of interest.

For the Diablo Canyon announcement in June 2016, the event study finds an observed deviating fall in housing prices since the announcement, across all the dependent variables (See Figure 7 and Figure 8). This fall, though significant, is not large in magnitude. As the housing market is much less liquid and responsive than, for example, the financial market, and as this is only the *announcement* of the Diablo Canyon closure, this fall should be interpreted with care. Additionally, the relative recency of the closure announcement means there is less trailing data to analyze adjustments since the announcement. This announcement effect is driven largely by the transactions located closer to the power plant, specifically the “Less than 10 miles” and “10 to 20 miles” groups. This can be seen in Figure 9 through 13.

By comparison, however, the DinD analysis found a significant negative coefficient on the DinD variable, which indicates a positive announcement effect on the housing market and contradicts the conclusions from the event study. This positive announcement effect is also relatively small in magnitude. This negative result could be a result of an end to discounting of prices due to a taste preference for not living in proximity to a nuclear reactor.

For the SONGS closure in June 2013, the event study finds an observed deviating rise in housing prices since the closure, across all the dependent variables. This rise is relatively large in magnitude. This is consistent with proximity to the power plant. Similar to the DCPP analysis, the DinD results for SONGS also have a negative interaction coefficient. This is consistent with the event study analysis.

In the national comparisons, detailed in Figures 16 through 18, the event studies exhibited little to no significant closure impact, and where such an impact could be identified (specifically the Vermont Yankee case in Figure 18) this has a very quick rebound in prices, likely indicating that the most significant downward pressure is an immediate and transient fall in prices as would be expected from an increase in sales due to departing power plant employees. Though they are not included here, breaking up these instances by distance does not result in any change from these observations. In the national DinD analysis, the Fort Calhoun case resulted in insignificant negative coefficients as with DCPP and SONGS for both its announcement and closure. The Keweenaw case resulted in an insignificant negative coefficient for the announcement and a significant positive for the closure. The Vermont Yankee case resulted in insignificant positive coefficients for both the announcement and the closure. All-in-all these are mixed results, with some lean towards no significant negative impact.

4.3 Results

All-in-all, analyses of the housing markets after the announcement of the DCPP closure and after the announcements and closures of other nuclear power plants in the last decade indicate that the housing market in San Luis Obispo County is unlikely to be substantially undermined by the DCPP closure. Though a recent announcement effect can be found in event analyses and some temporary closure effects can be found in the comparison cases, these cases indicate such a hit is unlikely to be a long-term problem now or after the actual closure of DCPP.

Table 54: Temporal and Geographic Information of Nuclear Power Plant Cases

Power Station	Announcement Date	Closure Date	County	Other Included Counties	MSA	Census Division	Coordinates
Fort Calhoun Nuclear Generating Station	16-Jun-2016	24-Oct-2016	Washington, NE	Burt, NE; Douglas, NE; Dodge, NE; Cass, NE; Sarpy, NE; Saunders, NE; Mills, IA; Harrison, IA; Pottawattamie, IA	Omaha-Council Bluffs, NE-IA	West North Central	41.5203° N, 96.0772° W
Vermont Yankee Nuclear Power Plant	28-Aug-2013	29-Dec-2014	Windham, VT	Windsor, VT; Bennington, VT; Sullivan, NH; Cheshire, NH; Franklin, MA	n/a	New England	42.7789° N, 72.5131° W
Keweenaw Power Station	22-Oct-2012	7-May-2013	Keweenaw, WI	Door, WI; Manitowoc, WI; Brown, WI; Oconto, WI	Green Bay, WI	East North Central	44.3422° N, 87.5361° W
Diablo Canyon Power Plant	21-Jun-2016	26-Aug-2025	San Luis Obispo, CA		San Luis Obispo-Paso Robles, CA	Pacific	35.2108° N, 120.8561° W
San Onofre Nuclear Generating Station	7-Jun-2013	12-Jun-2013	San Diego, CA	Orange, CA	San Diego-Carlsbad, CA	Pacific	33.3689° N, 117.555° W

Table 55: Difference-in-Differences Estimates

	DCPP Announce- ment	SONGS Closure	FCNGS Announce- ment	FCNGS Closure	KPS Announce- ment	KPS Closure	VYNPP Announce- ment	VYNPP Closure
Distance from power plant	-6826.64*** (335.37)	-6498.65*** (354.30)	6,011.89 (13,386.16)	5,539.62 (14,742.00)	-8,080.39 (4,413.37)	-10,495.76* (4,632.85)	2,390.63** (801.29)	1,838.19* (860.60)
Post indicator	62717.72*** (9,928.33)	175,262.19*** (4,952.27)	-46,613.60 (125,106.65)	30,811.37 (154,073.70)	39,977.57 (61,964.09)	-191,067* (81,064.53)	3,601.02 (8,532.07)	-7,186.26 (11,175.98)
Distance * Post	-2493.00*** (357.26)	-3,855.37*** (89.86)	-3,018.03 (5,579.60)	-4,364.41 (6,543.10)	-976.44 (1,745.41)	5,486.03* (2,544.38)	41.56 (177.48)	318.96 (242.25)
Square footage	179.45*** (1.13)	292.39*** (0.68)	110.94*** (9.13)	112.37*** (9.85)	48.16*** (6.37)	48.99*** (6.77)	40.31*** (0.96)	40.80*** (1.04)
Bedrooms	-686.51 (1,002.88)	- 28,405.00*** (541.58)	-9,175.44 (16,919.54)	-8,655.85 (18,625.06)	4,389.01 (6,979.07)	4,922.70 (7,494.55)	10,789.13*** (1,762.01)	10,190.59*** 1,907.623
Age	156.12*** (36.78)	783.72*** (28.72)	-1,429.40* (691.01)	-1,516.41* (762.54)	-898.88*** (143.00)	-941.22*** (154.58)	-331.49*** (29.52)	-347.83*** (32.13)

* p < 0.05; ** p < 0.01; *** p < 0.001

Figure 7: San Luis Obispo County Housing Market, Mean Sales Price, with groups by distance from the Diablo Canyon Power Plant

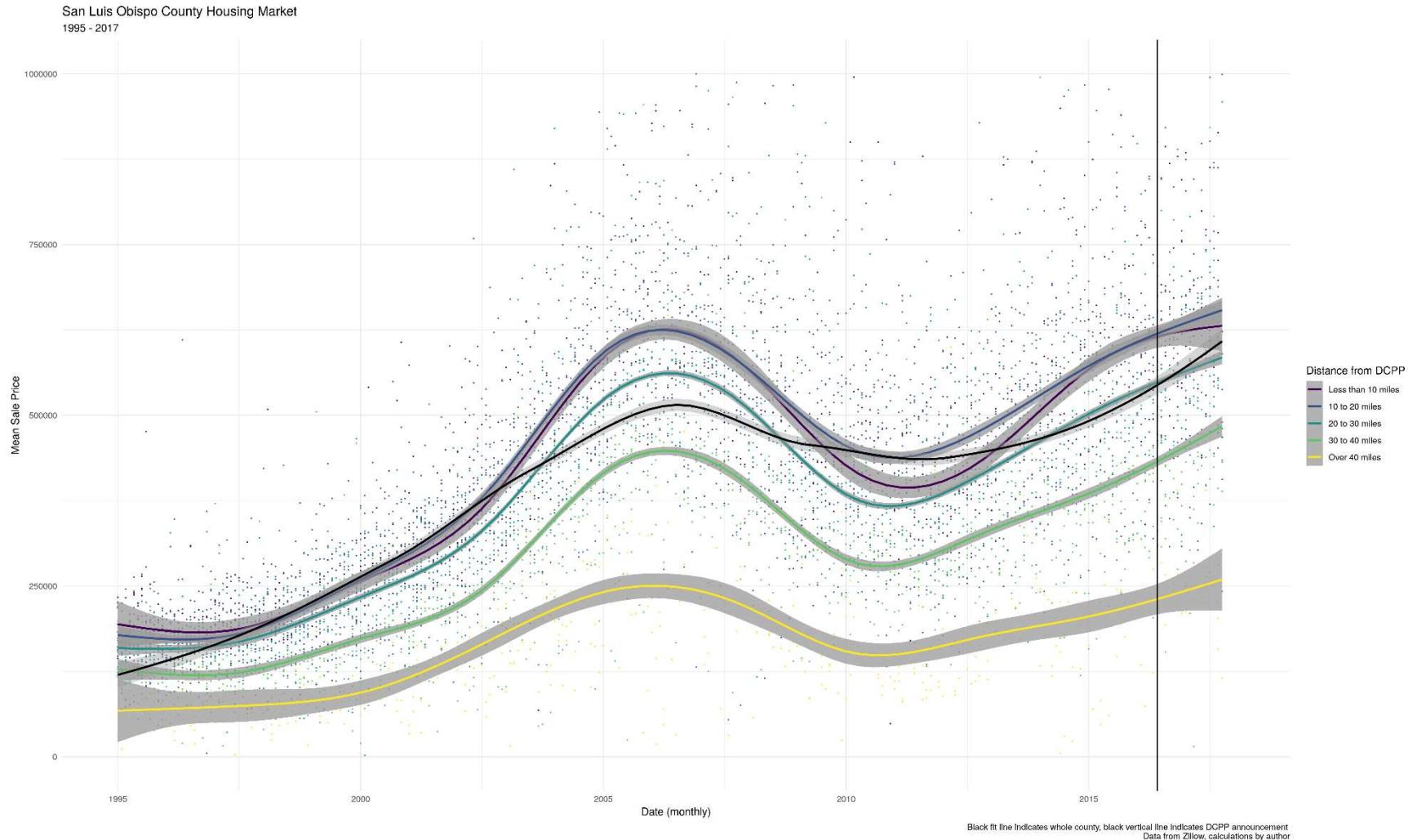


Figure 8: San Luis Obispo County Housing Market, Mean Price per Square Foot, with groups by distance from the Diablo Canyon Power Plant

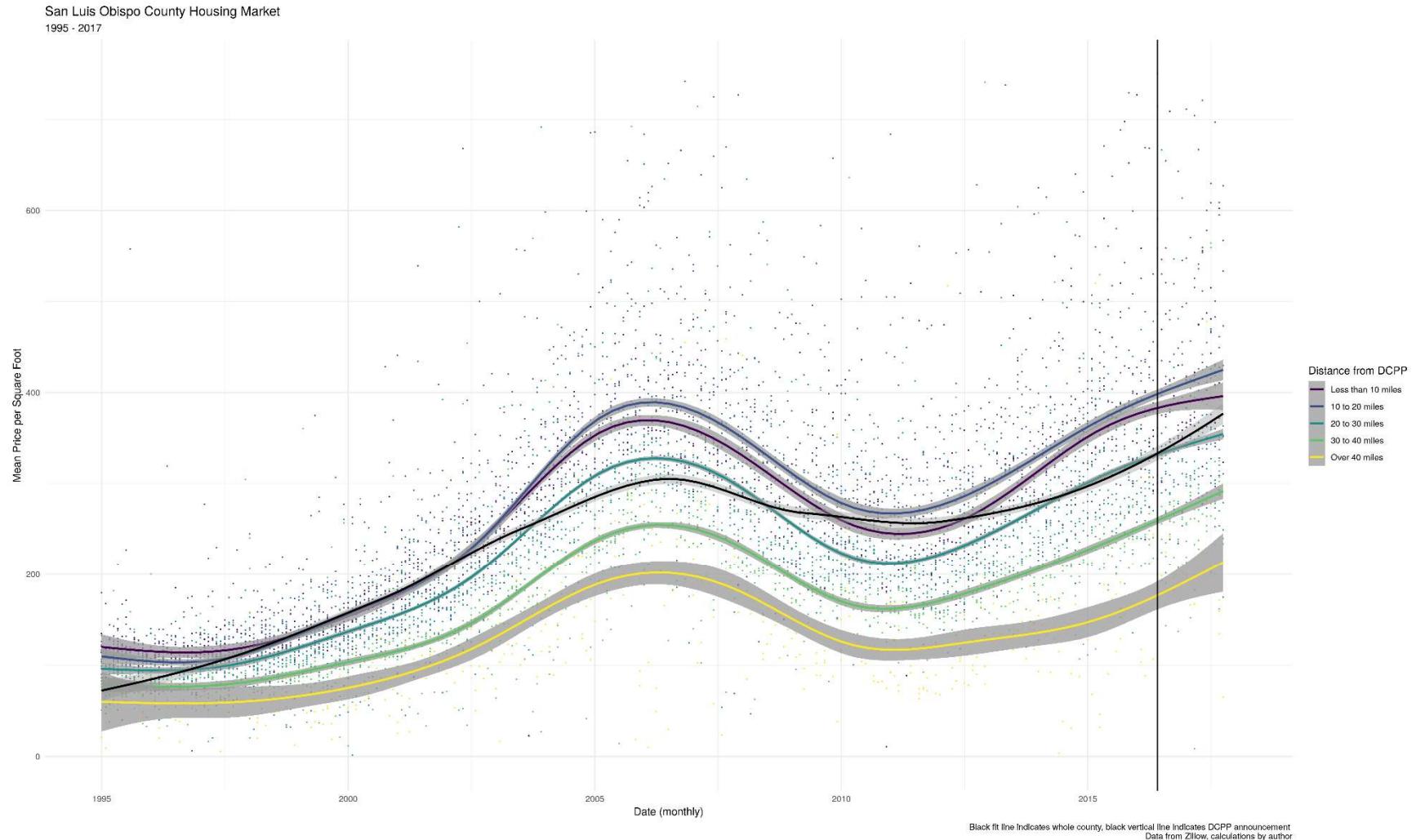


Figure 9: San Luis Obispo County Announcement Effect, Sales Price

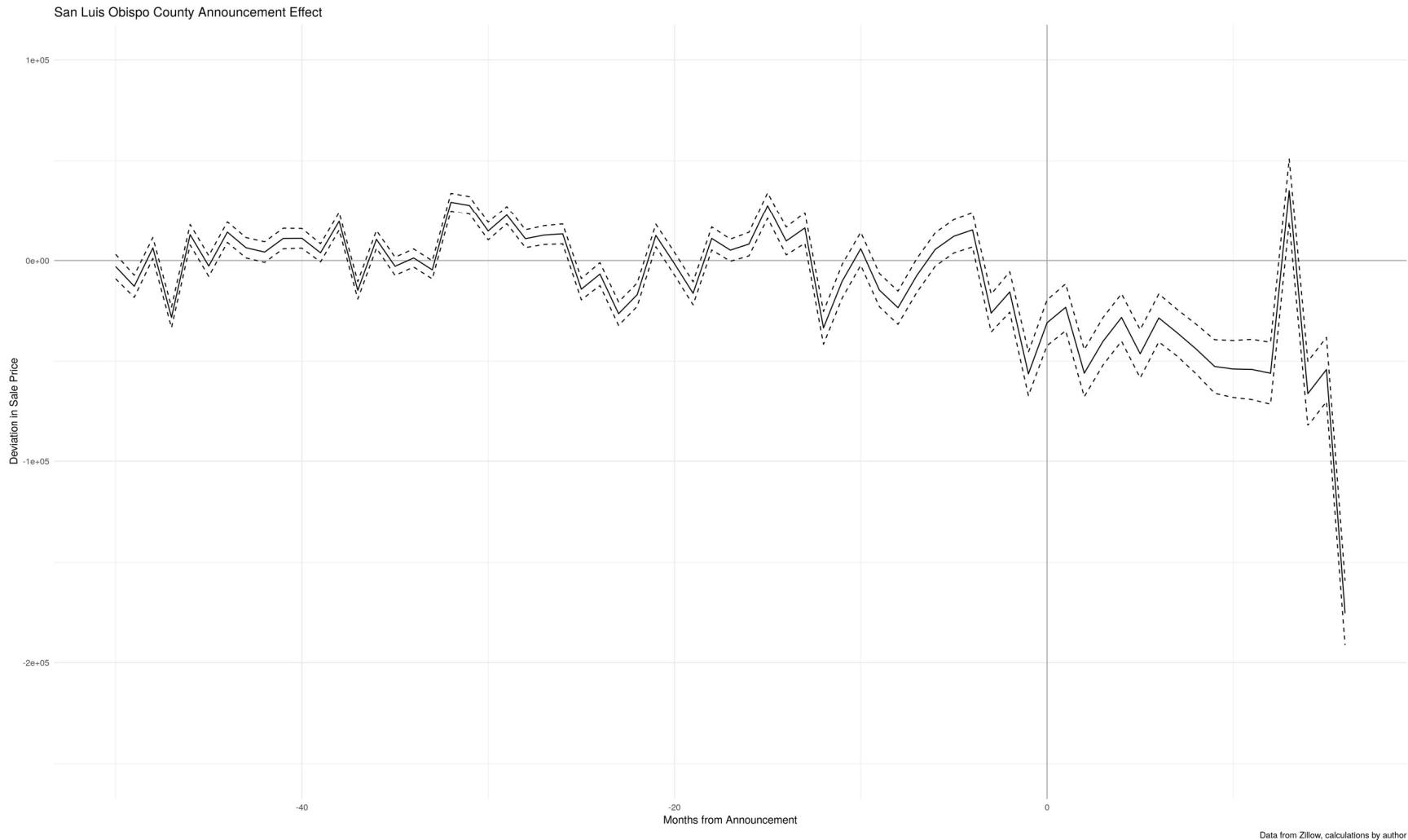


Figure 10: San Luis Obispo County Announcement Effect, Price per Square Foot

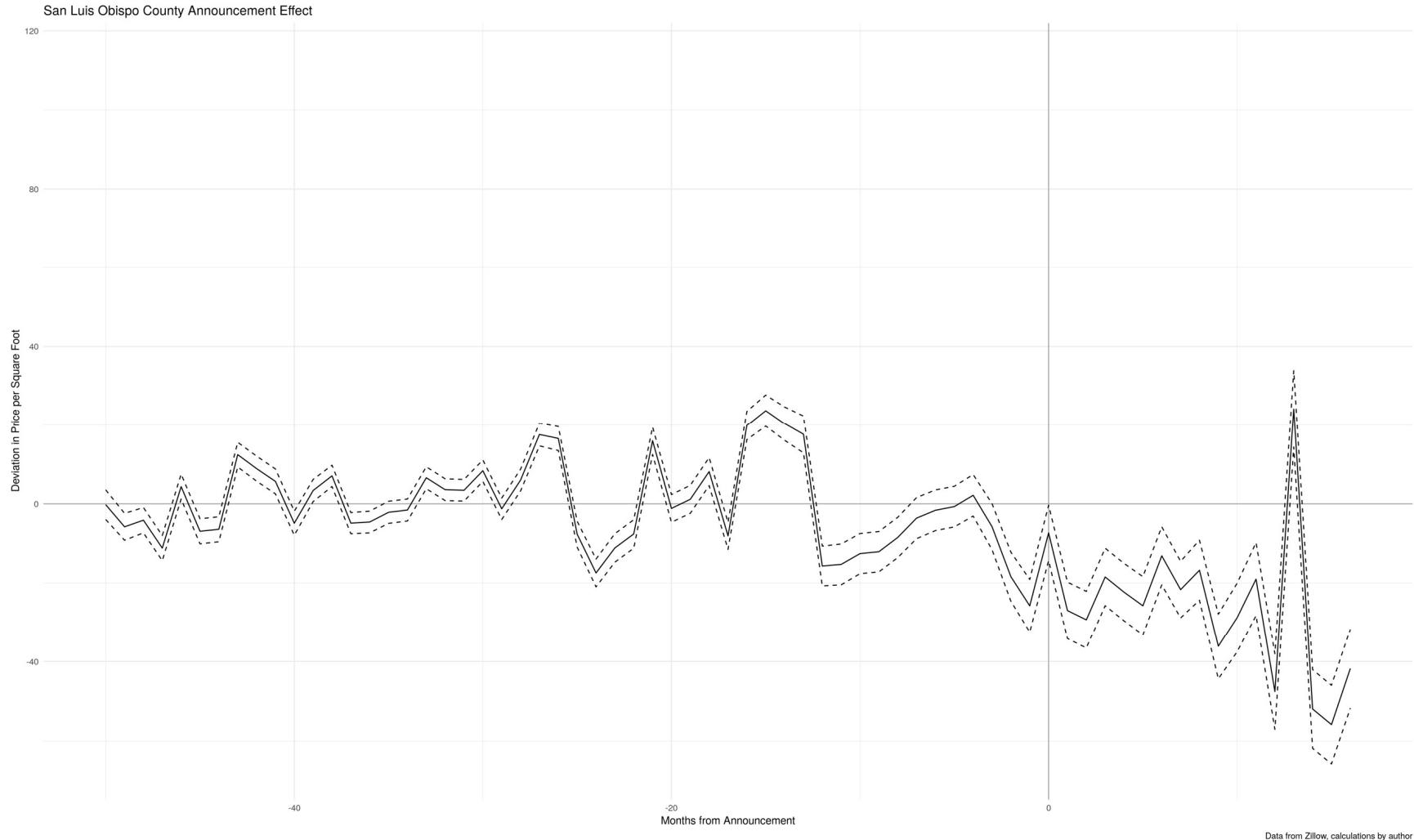


Figure 11: San Luis Obispo County Announcement Effect, Sales Price, Less than 10 Miles from DCPP

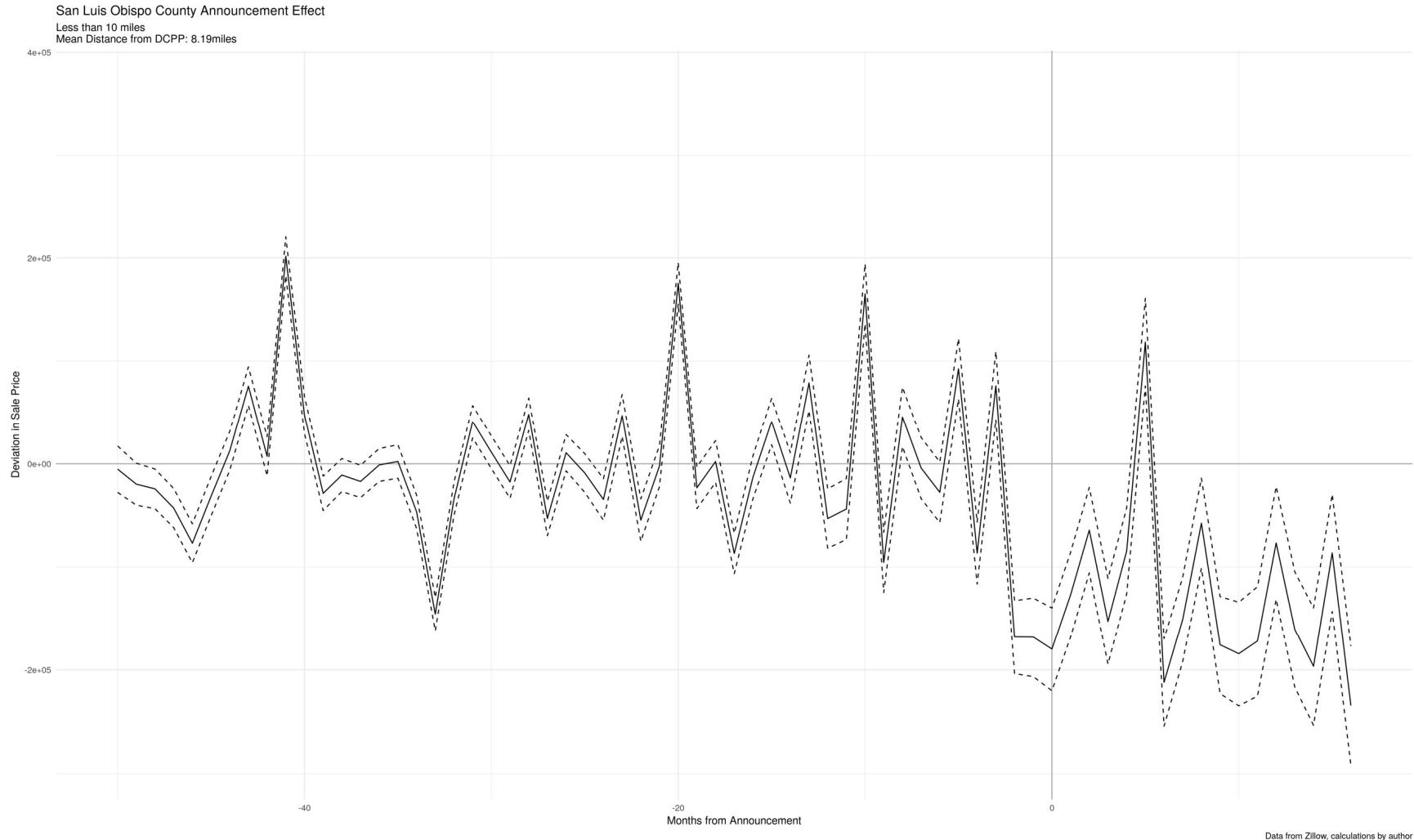


Figure 12: San Luis Obispo County Announcement Effect, Sales Price, 10 to 20 Miles from DCPP

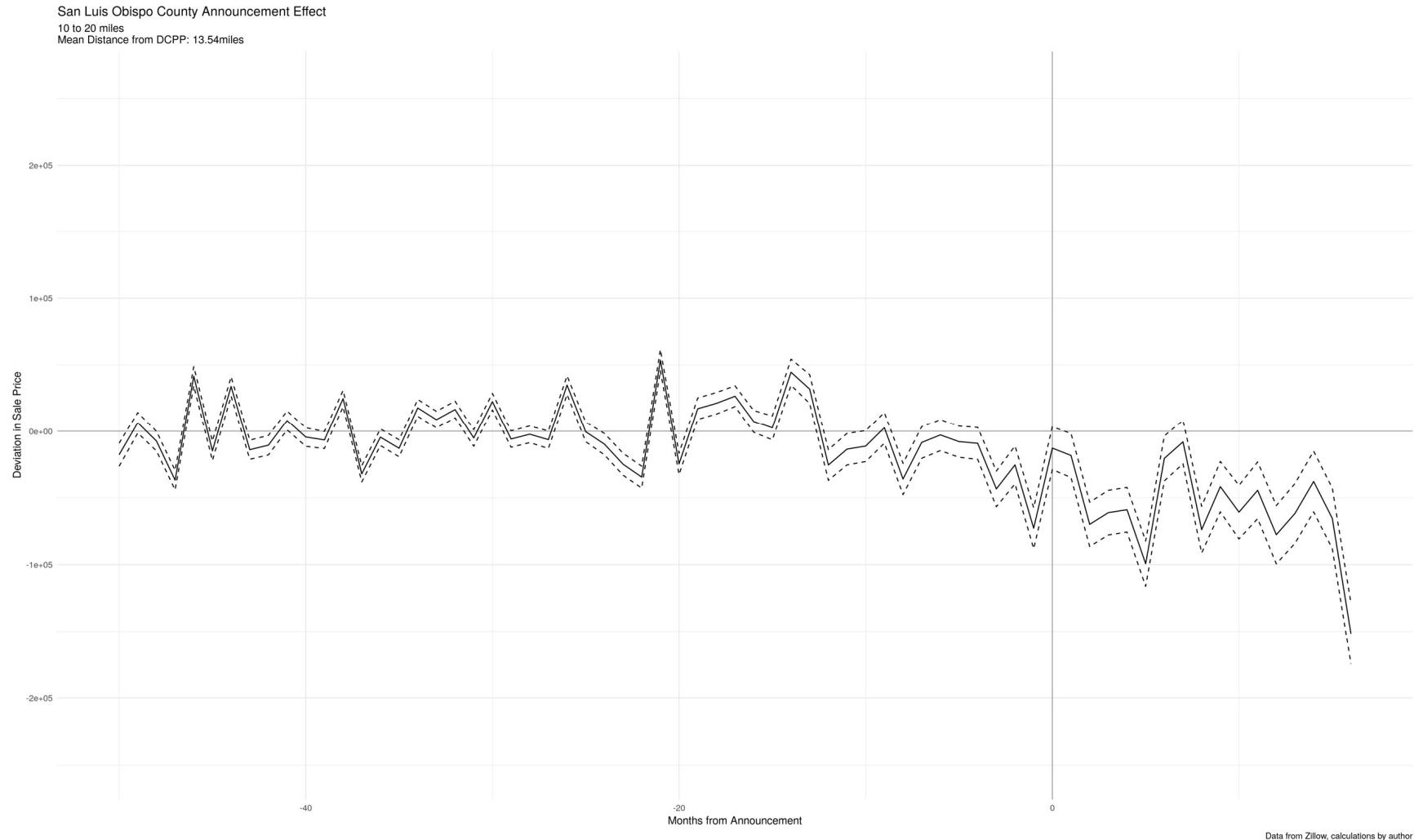


Figure 13: San Luis Obispo County Announcement Effect, Sales Price, 20 to 30 Miles from DCPP

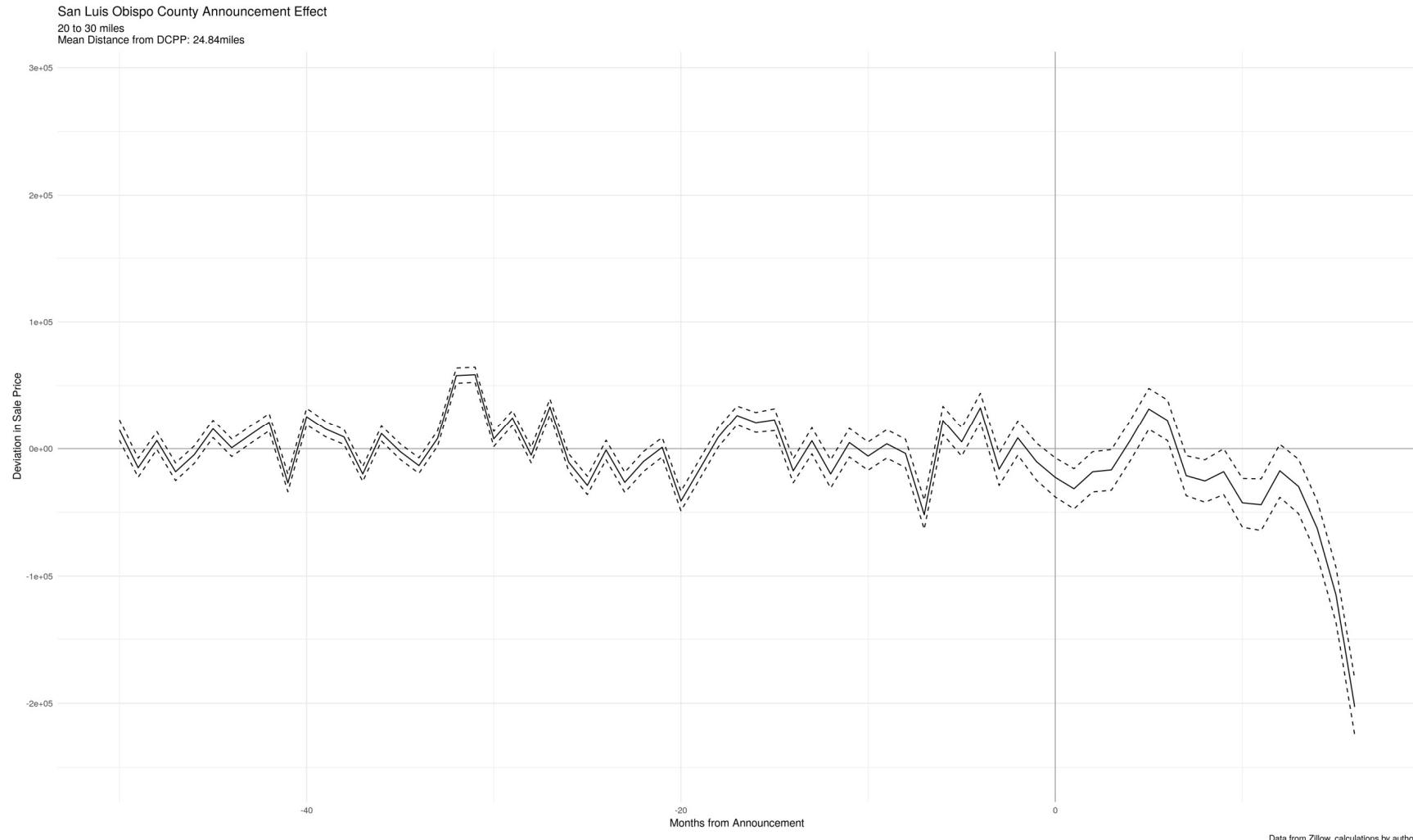


Figure 14: San Luis Obispo County Announcement Effect, Sales Price, 30 to 40 Miles from DCPP

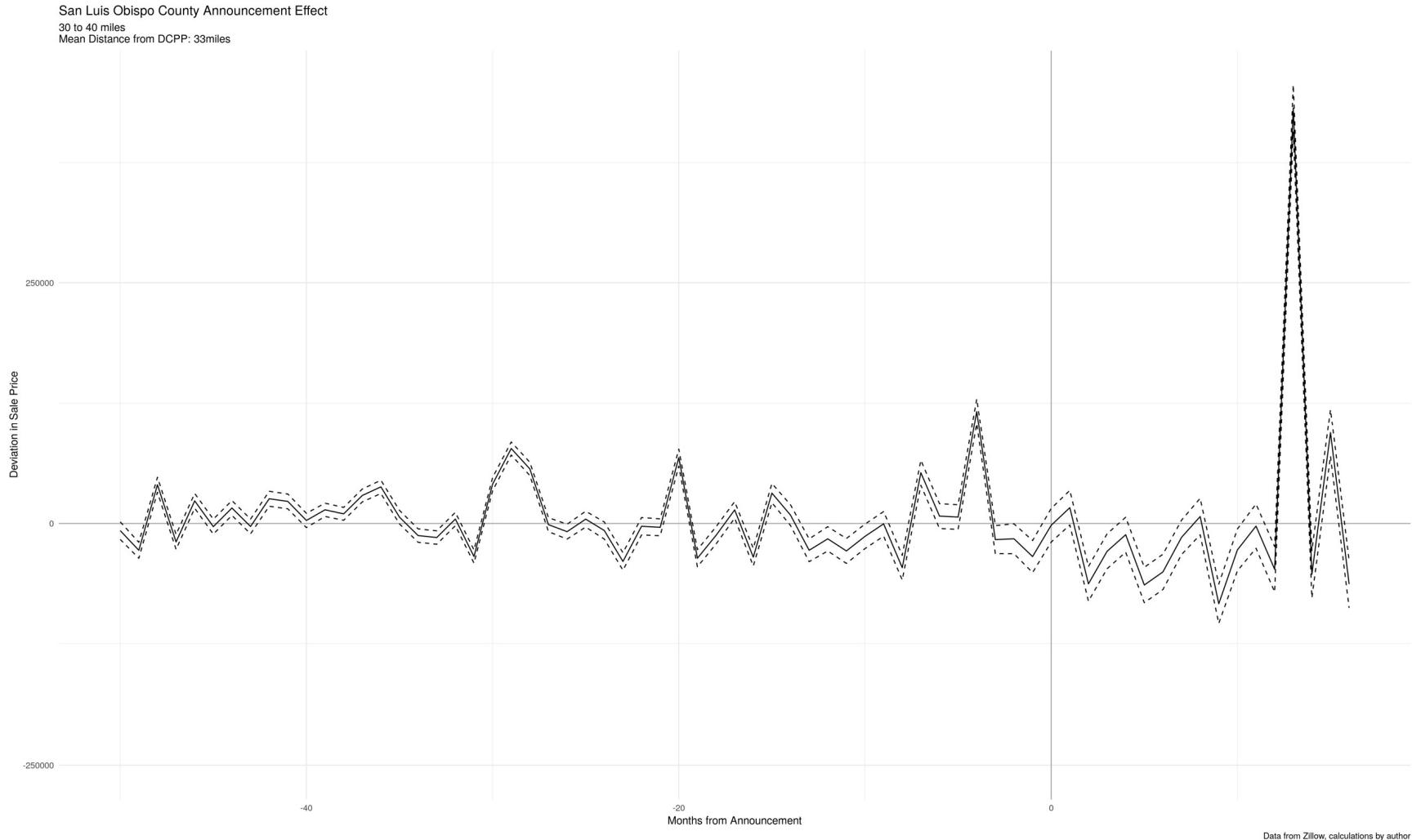


Figure 15: San Luis Obispo County Announcement Effect, Sales Price, Over 40 Miles from DCPP

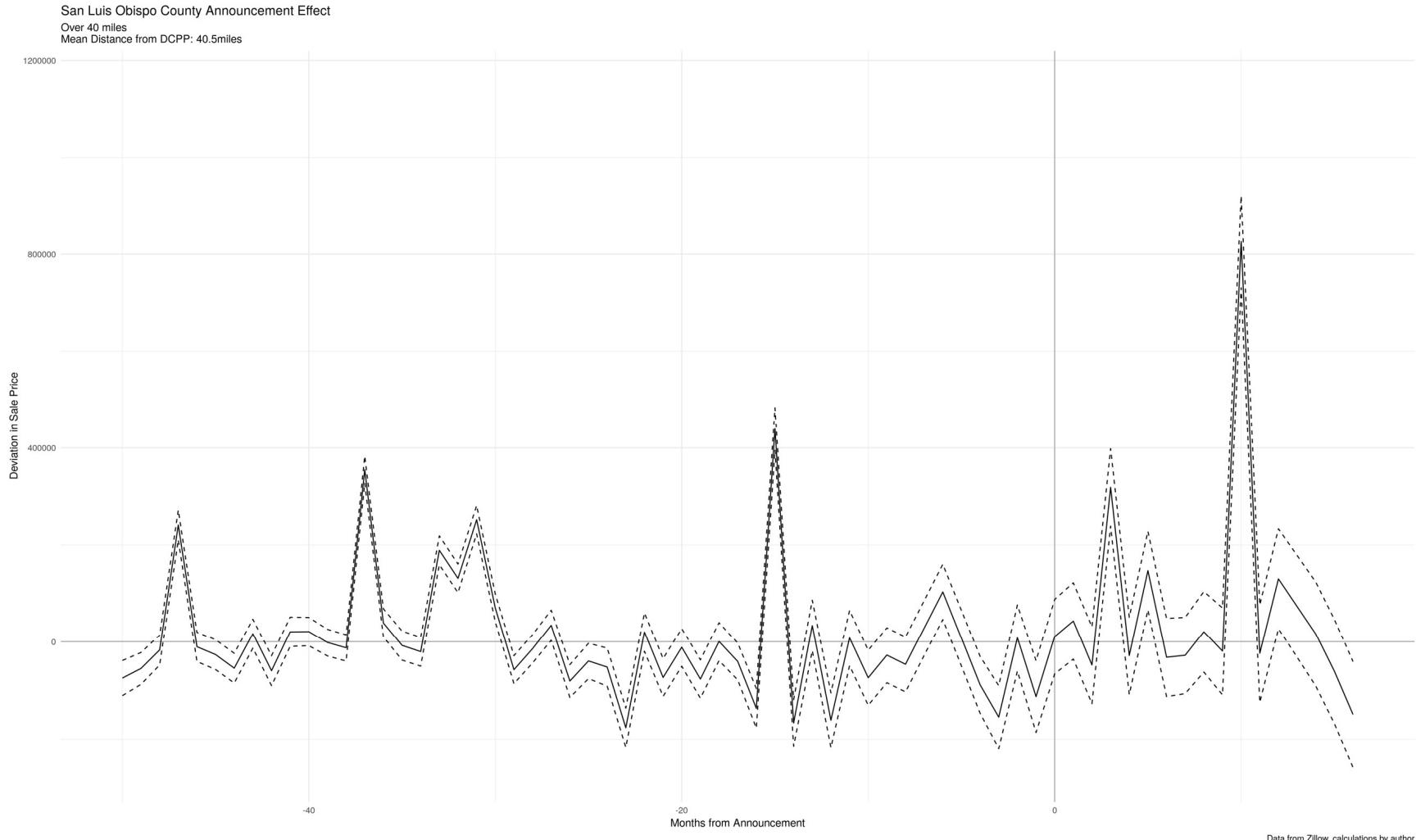


Figure 16: Orange and San Diego Counties Closure Effect, Sales Price

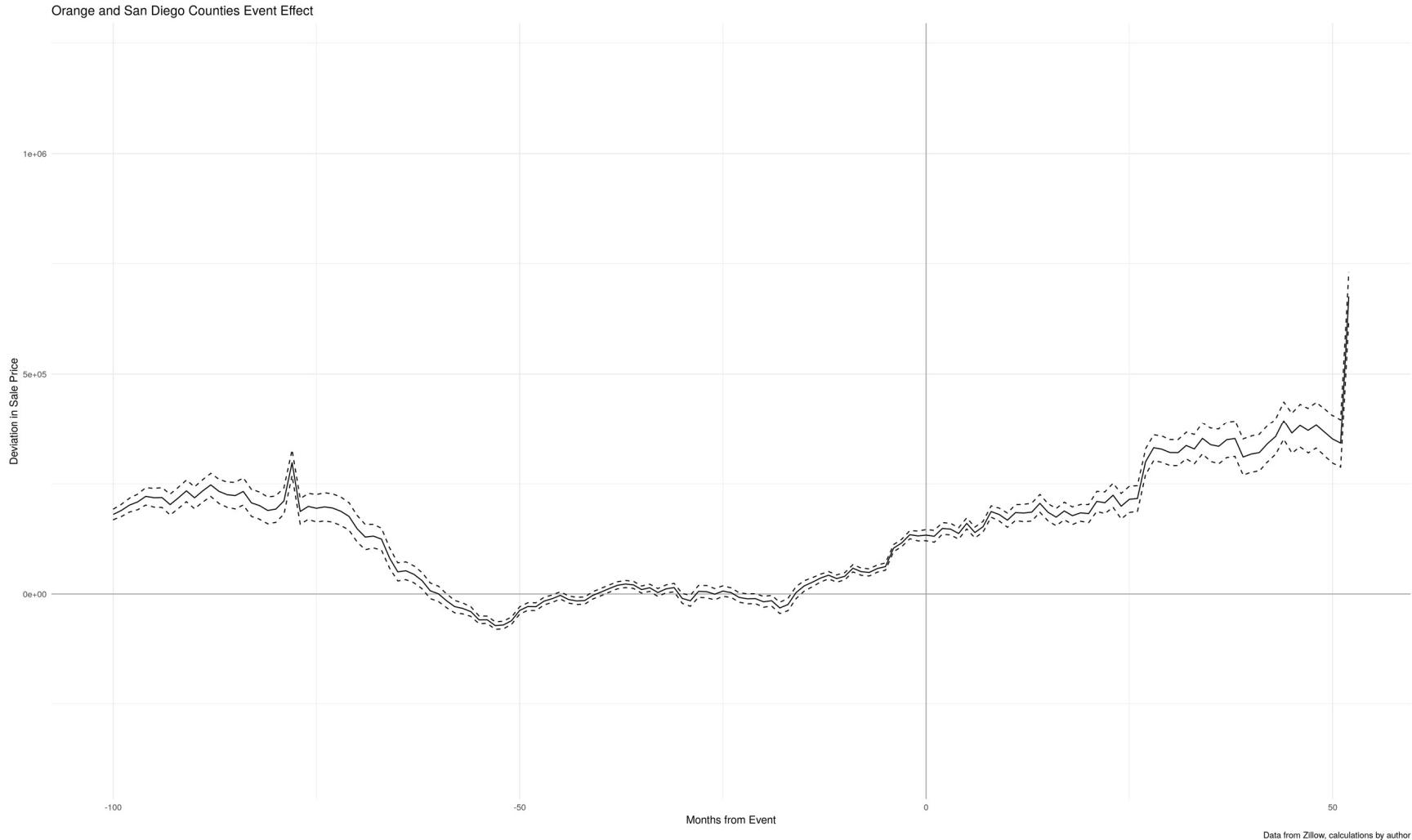


Figure 17: Orange and San Diego Counties Closure Effect, Sales Price, 10 to 20 miles from SONGS

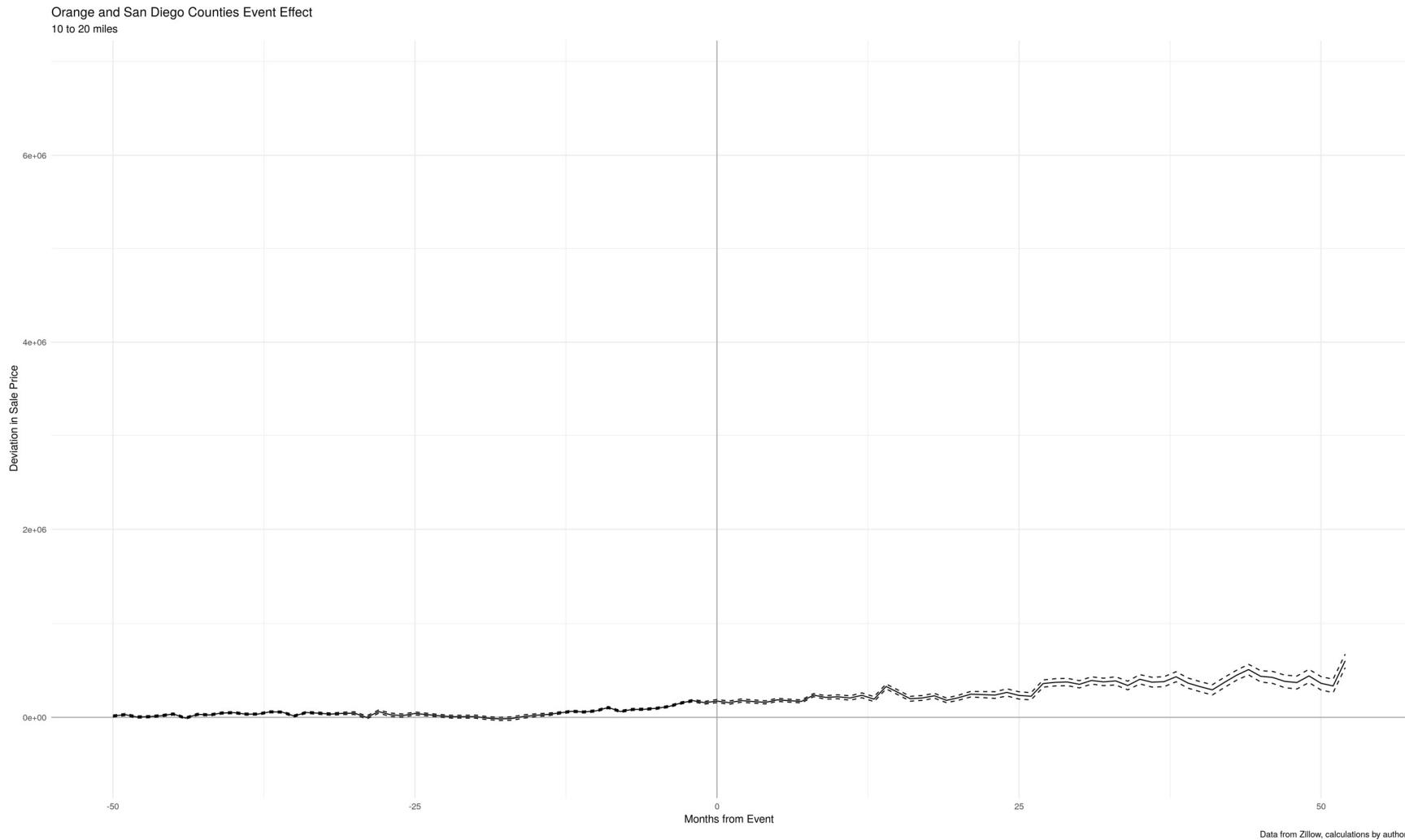


Figure 18: VYNPP Regional Closure Effect, Sales Price

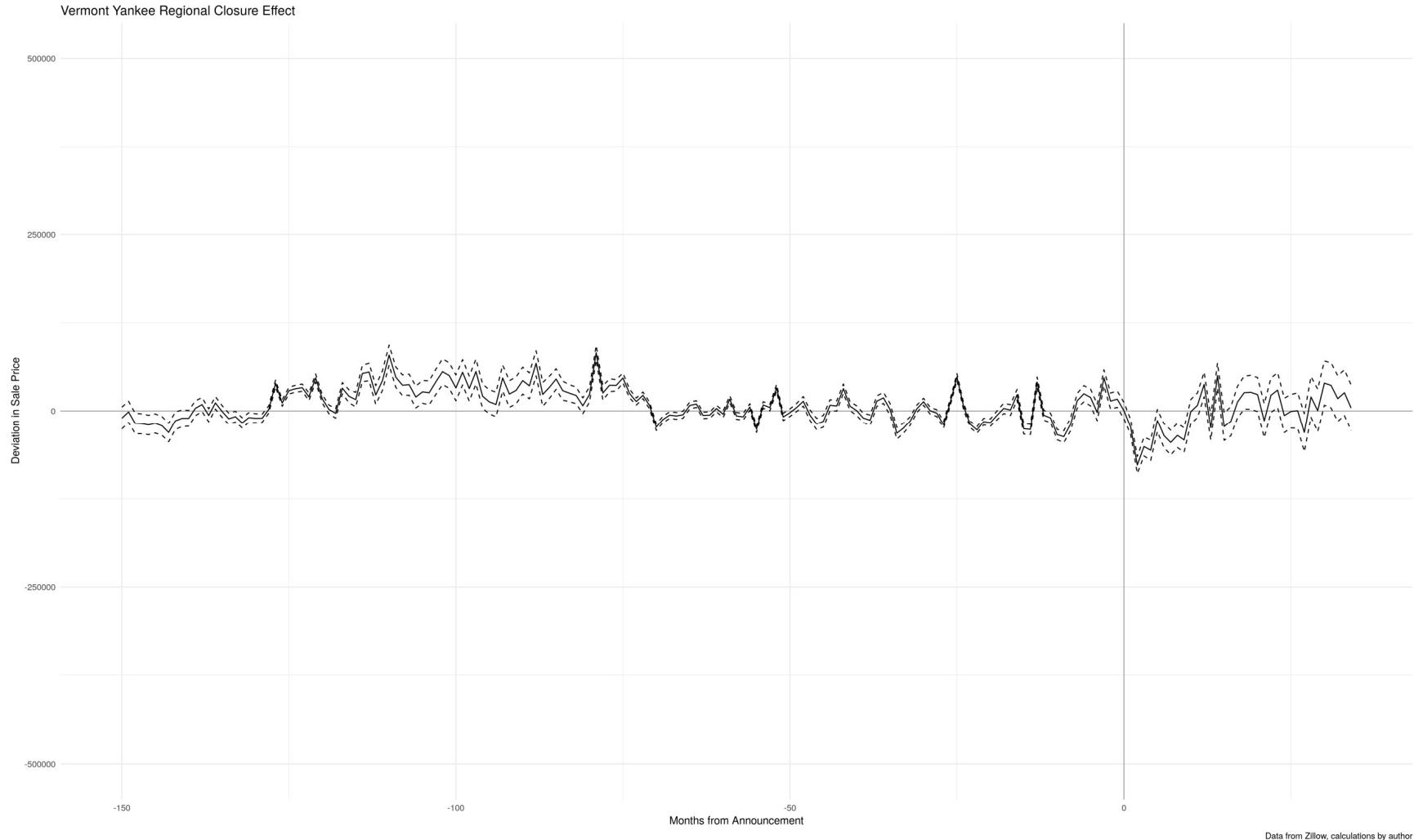


Figure 19: KPS Regional Closure Effect, Sales Price

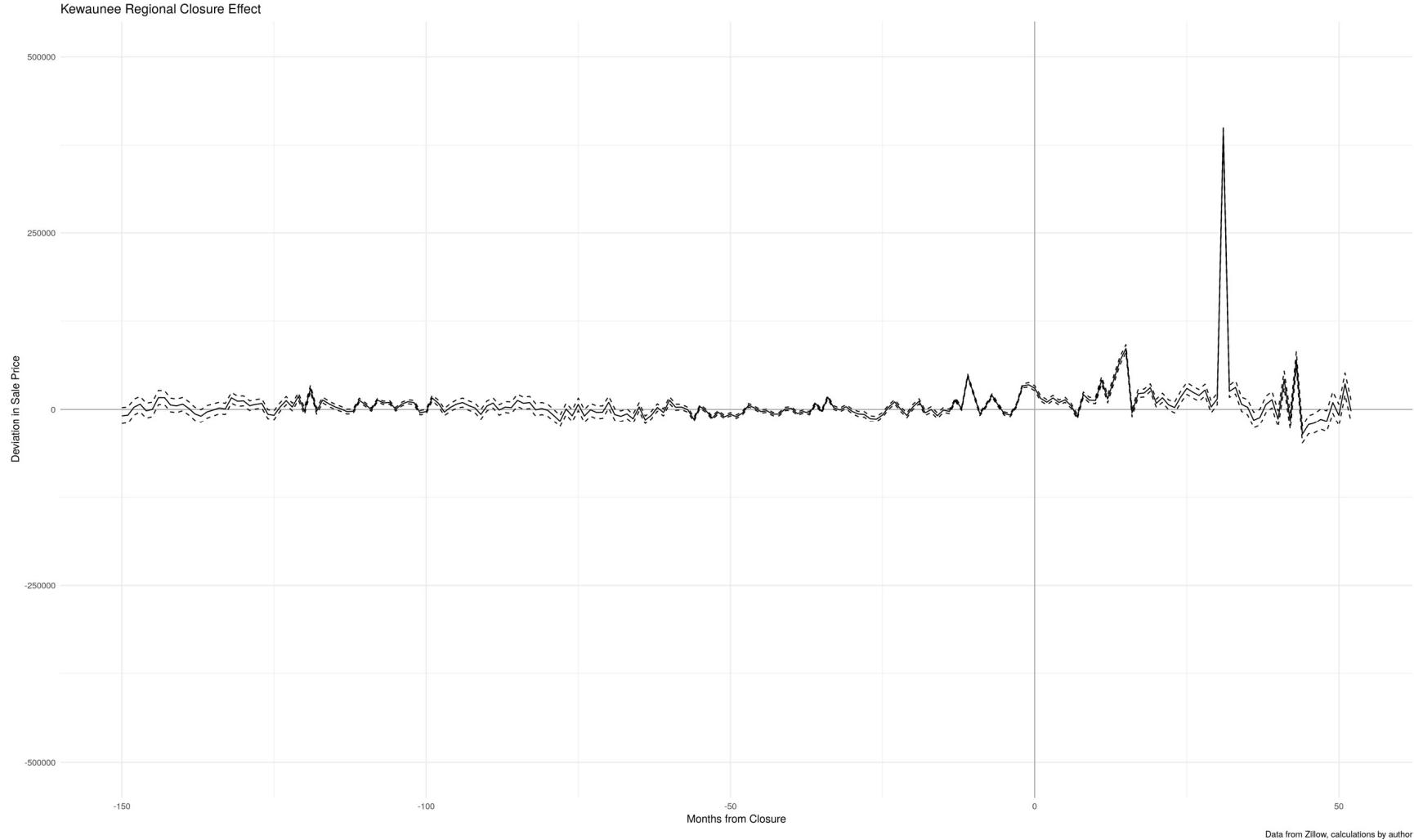
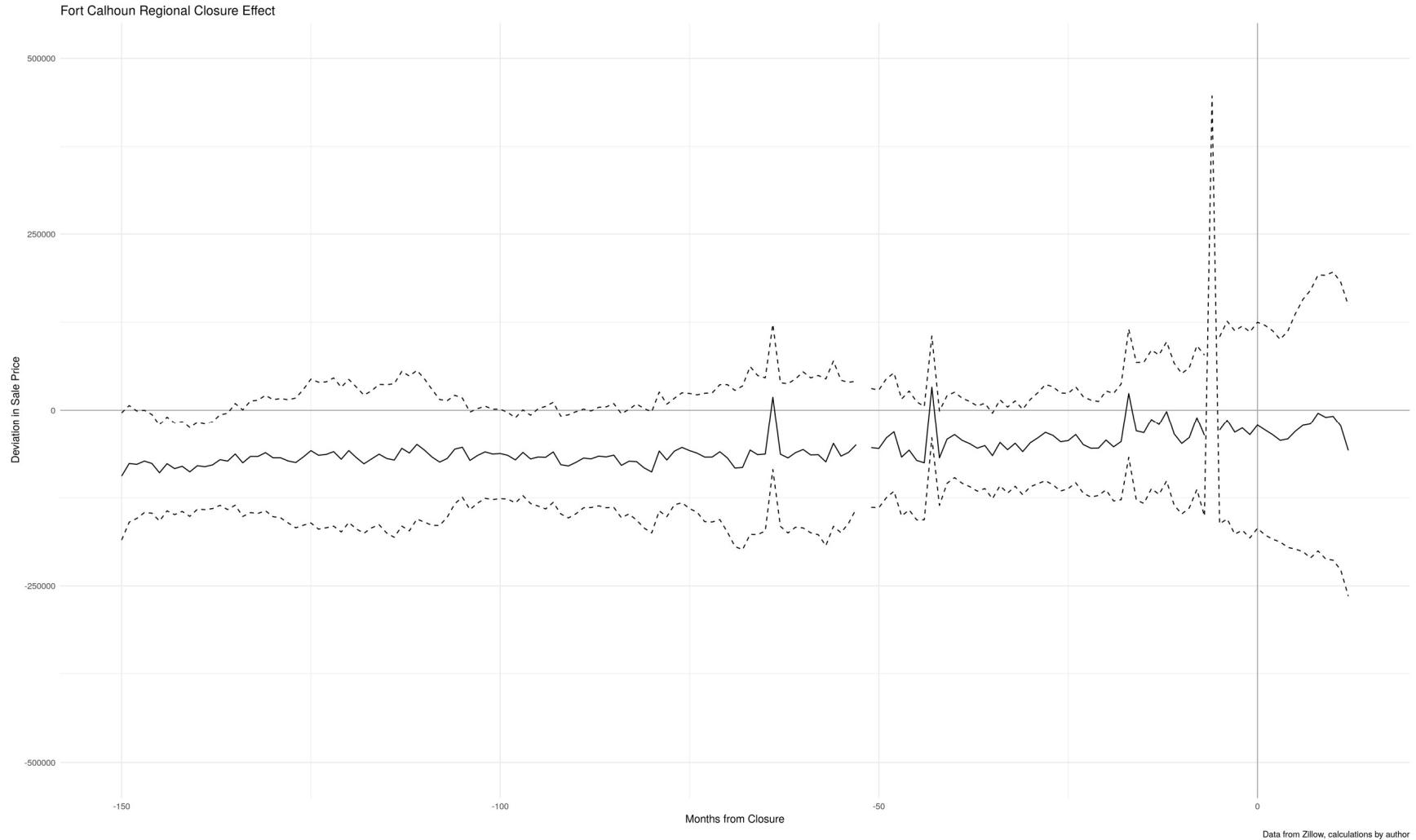


Figure 20: FCNGS Regional Closure Effect, Sales Price



4.4 Conclusions

SLO County's housing market has largely recovered from the adverse macroeconomic cycle that arose in 2008. Housing prices have sustained steady increases over the last decade. Event study of the announcement effect has found no significant impact associated with the closure announcement. For quite similar reasons, we found that the area around SONGS, in San Diego and Orange Counties, has shown no significant impact associated with the closure. Our comparison assessments of other national cases demonstrate the advantages for SLO of diversity and large neighboring economies.

5 Bond Market Assessment

5.1 Approach

Like real estate values, fiscal resources have been a frequently expressed concern, especially by public sector stakeholders. In our impact assessment (component 1 above), we estimate the direct, indirect, and induced revenue implications of the main DCPP closure effects. Of perhaps even greater significance for SLO public finance, however, is the cost of capital for local public entities. In times when economic sentiments about a regional economy turn negative, bond markets usually send a clear signal by pricing risk into higher bond rates. The effects of this on overall budgets can often be much greater than the loss of individual revenue sources. To ascertain the significance of this for SLO and DCPP, we studied high frequency data on local bond prices econometrically.

One of the chief impacts of the DCPP closure is its fiscal impact on the various government institutions of San Luis Obispo County. In terms of public revenue, the closure of the Diablo Canyon Power Plant is most impactful through the loss of unitary county property taxes paid by PG&E for the power plant and related infrastructure. For the 2018-2019 fiscal year, these taxes totaled \$25,783,066.04, representing 12.58% of total taxes collected by the county and 4.081% of total county revenue.

The loss of a significant revenue stream, as the property taxes from DCPP are commonly posed, would be expected to have an impact on the cost of capital for municipal projects. Specifically, if the unitary taxes from DCPP were considered significant by the bond market, we would expect to see increased interest rates for municipalities affected by the loss (e.g. San Luis Obispo County, the City of San Luis Obispo, San Luis Coastal Unified, etc.). Interviews in September 2018 of representatives from San Luis Obispo County and the City of San Luis Obispo elicited responses that their respected bond managers were little worried about the effect of the public revenue loss on financing. A glance at bond ratings of relevant municipal bonds matches this assessment.

To analyze this econometrically with more rigor, we have used an event study framework common in the financial economics field to look for market indicators of an increasing cost to capital, both analyzing price and rates (through yield-to-maturity rates). Both should provide the same result because of the standard inverse price-yield relationship for bonds (as bond prices increase, bond yields fall and vice versa). The event study framework allows us to compare the observed rates and prices of the selected bonds with predicted values based on historical relationships, to identify if the announcement of the closure caused some deviation in pricing or yields.

This methodology, of course, has its limitations. Its exact precision is, to some extent, dependent on the predictive ability of the input variables. So, increasing predictive power should increase the strength of the analysis. Additionally, the announcement date in 2016 is approximately 10 years before the actual closure date when much of the fiscal impact is to occur and all the bonds should be mature or close to maturity by then, so the market worries about the bonds will naturally be lessened. Nevertheless, we should at least be able to find an indication of market worry if it is present. If there is no generalized movement at all, this would support the conclusions based on interviews and bond ratings.

5.2 Methods and Data

Raw data is sourced from Bloomberg Terminal. Price and yield-to-maturity rates are used for each municipal bond. These are compared and predicted using Generic 10-Year Treasury Rates and the Bloomberg Barclays Municipal Bond California Exempt Total Return Index Unhedged. Bonds were analyzed from the following issuing authorities:

- County of San Luis Obispo
- San Luis Obispo County Financing Authority
- San Luis Obispo Public Financing Authority
- San Luis Obispo Capital Improvement Board
- City of San Luis Obispo
- Paso Robles Joint Unified School District
- San Luis Coastal Unified School District

The bond pricing is produced by Bloomberg's BVAL Evaluated Prices because of the relatively infrequent trading of the selected bonds. Such Evaluated Prices are constructed with multiple methods that are then combined to produce a single price, so even when market data is limited, a reliable pricing is still produced. BVAL Data is an industry standard for such evaluated pricing. The date used for the announcement of the closure is Tuesday, June 21, 2016.

Two different versions of the event study are conducted to produce predicted values for comparison. Version 1 is conducted with the corresponding input variable for the prediction regressions (so predicted yields are calculated with the Treasury rates, prices with municipal bond index prices). Version 2 is conducted with both, theoretically providing two points of measurement for the market to improve prediction, both including a standard investment (the Treasury bonds) and a measure of the California municipal bond market. The following regression specifications are used for the respective versions:

Ver. 1 (Yield)	$\text{YieldtoMaturity}_t = \beta_0 + \beta_1 \text{10yearTreasuries}_t + \varepsilon_t$
Ver. 1 (Price)	$\text{Price}_t = \beta_0 + \beta_1 \text{CAMunicipalIndex}_t + \varepsilon_t$
Ver. 2 (Yield)	$\text{YieldtoMaturity}_t = \beta_0 + \beta_1 \text{10yearTreasuries}_t + \beta_2 \text{CAMunicipalIndex}_t + \varepsilon_t$
Ver. 2 (Price)	$\text{Price}_t = \beta_0 + \beta_1 \text{10yearTreasuries}_t + \beta_2 \text{CAMunicipalIndex}_t + \varepsilon_t$

The results of each regression estimation are then used to produce predicted values for each observation of bond rates for each bond. We then find the rate deviation by taking the difference between the observed and predicted values.

To interpret this deviation, take, for example, the bonds put out by the County of San Luis Obispo. A positive rate deviation for one of these bonds indicates that the bond's market is experiencing higher rates than one would expect given the 10-year Treasury rate on that day and the recent historical relationship between the two. These higher rates mean the County of San Luis Obispo is considered by the market to be a riskier borrower than would be expected, and thus capital costs for the County would then be higher were they to release a bond at that time.

5.3 Results

The results showed little to no announcement effect on yield rates or bond pricing. We see no uniform upward shift in interest rates associated with the announcement nor a uniform downward shift in pricing, as we would expect from a positive shock to the cost of capital. There are no uniform movements, in general. In some individual bonds, there are statistically significant or at least noticeable shifts associated with the announcement date (specifically referring to Version 2 in yields, though these shifts are also present in Version 1 and for prices): 70262RAV Muni, 798703BD5 Muni (downward shifts), 798641AH9 Muni (upward shift). Nonetheless, these shifts quickly return to normal, predicted levels and individual bonds with differing directions do not add up to a generalized shift.

This confirms what we expected based on stakeholder interviews last Fall, where county and city officials reported little concern from their bond agents. Based on this, we can conclude that market expectations for fiscal issues stemming from the decommissioning are low. Theoretically, this is a good indication that fiscal issues will not be significant.

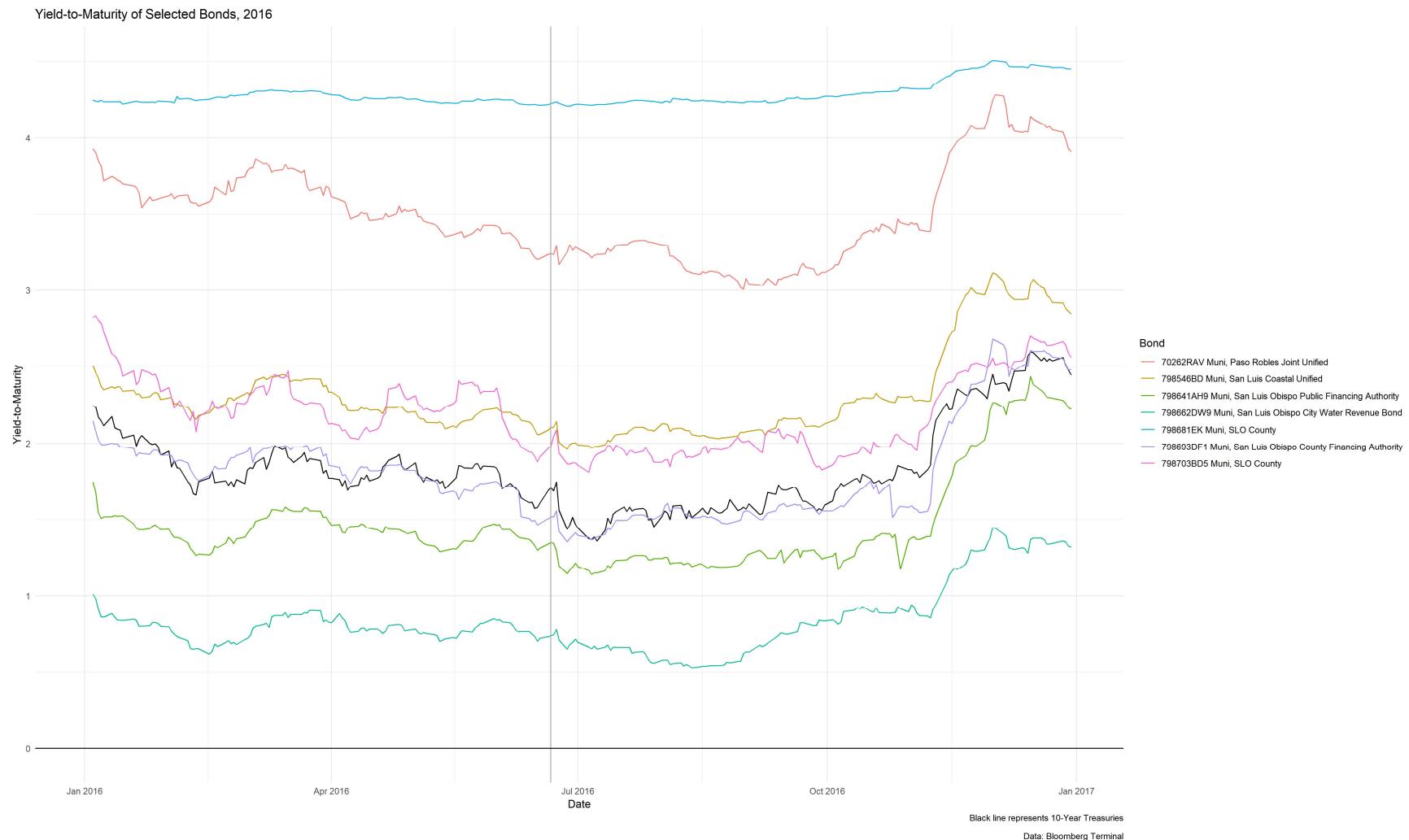


Figure 21: Yields-to-Maturity of San Luis Obispo County Municipal Bonds, 2016

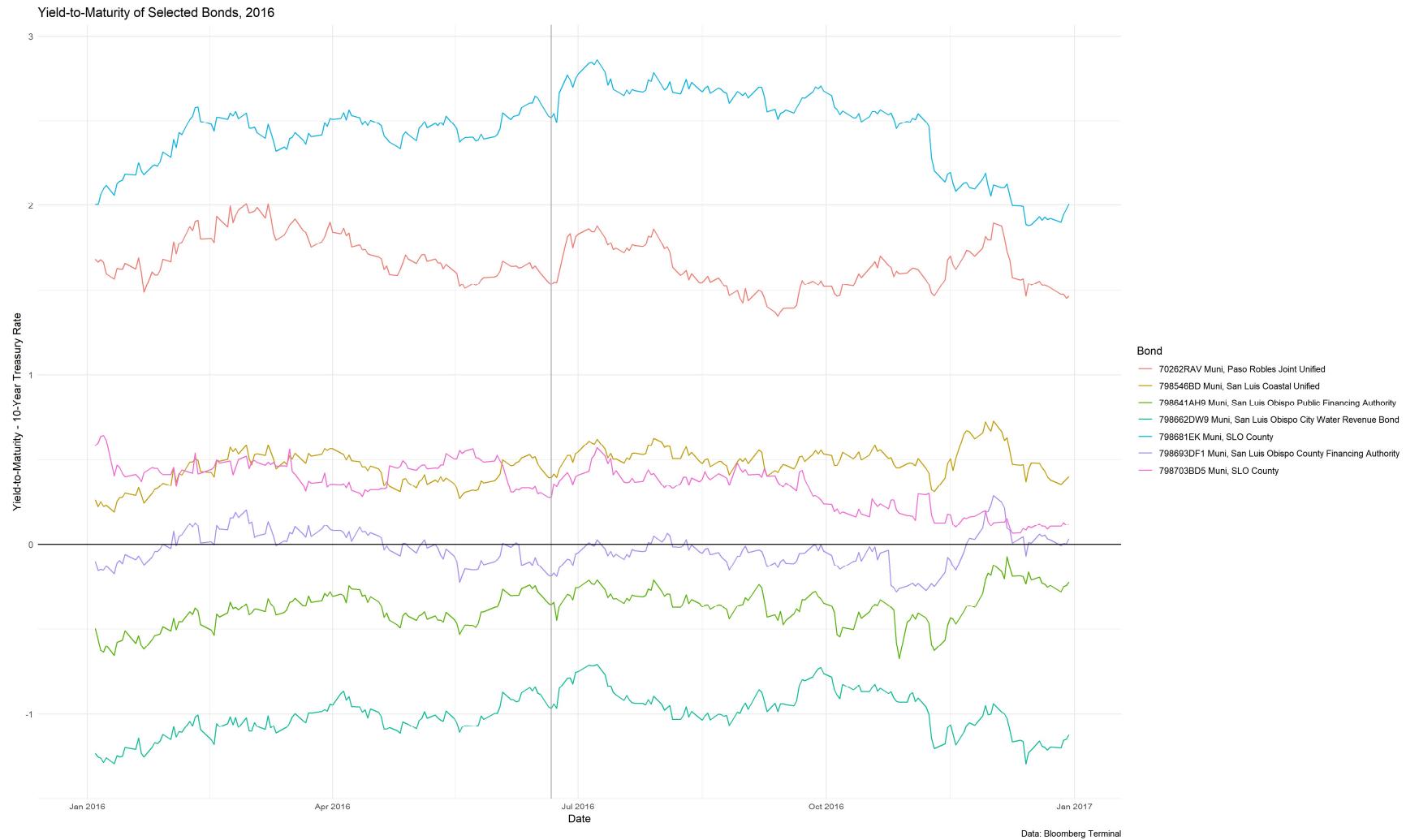


Figure 22: Difference of Yields-to-Maturity and 10-Year Treasury Rates of San Luis Obispo County Municipal Bonds (Yield Spreads), 2016

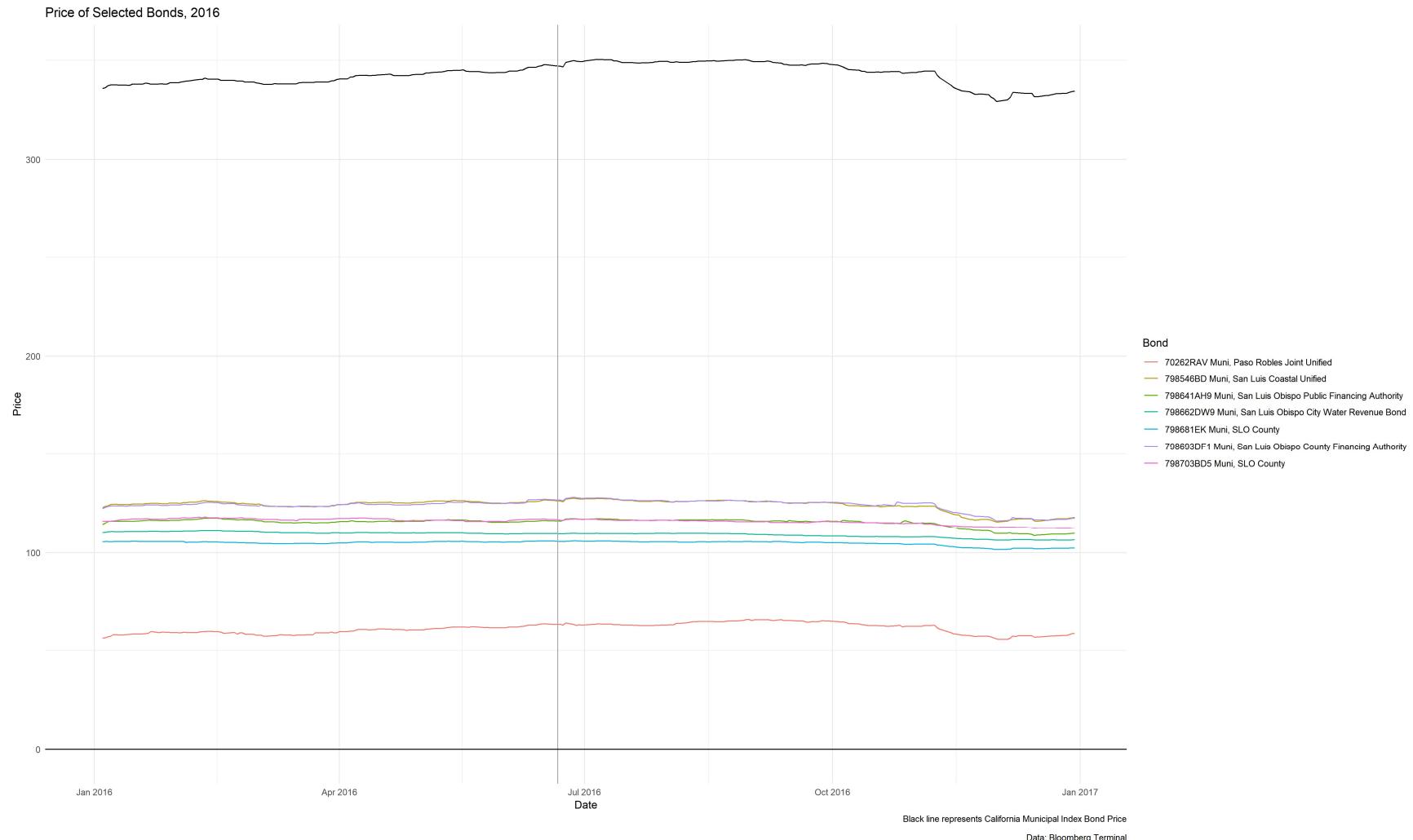


Figure 23: Bond Prices of San Luis Obispo County Municipal Bonds, 2016

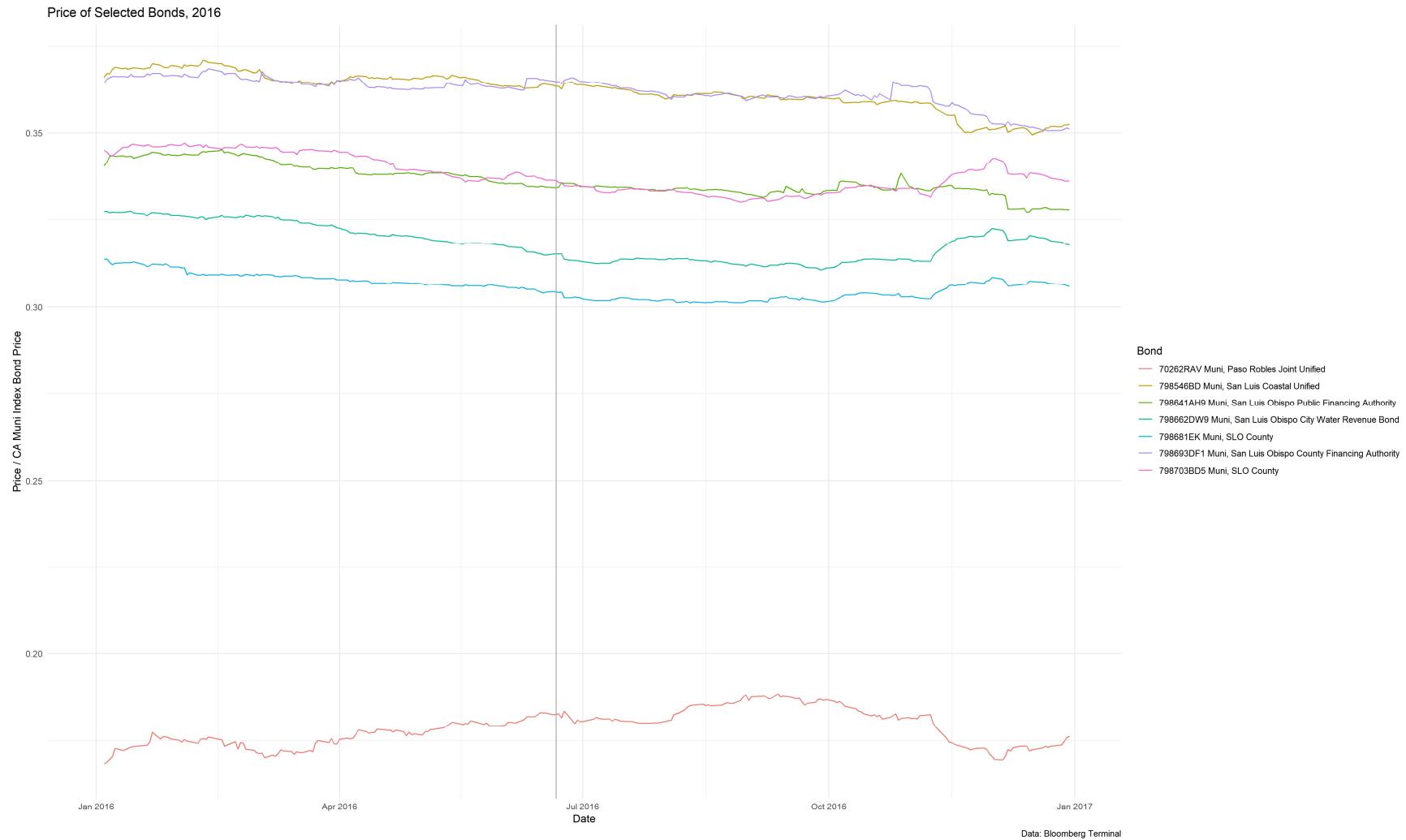


Figure 24: Ratio of Bond Prices of San Luis Obispo County Municipal Bonds over Price of a California Municipal Bond Index (Price Ratios), 2016

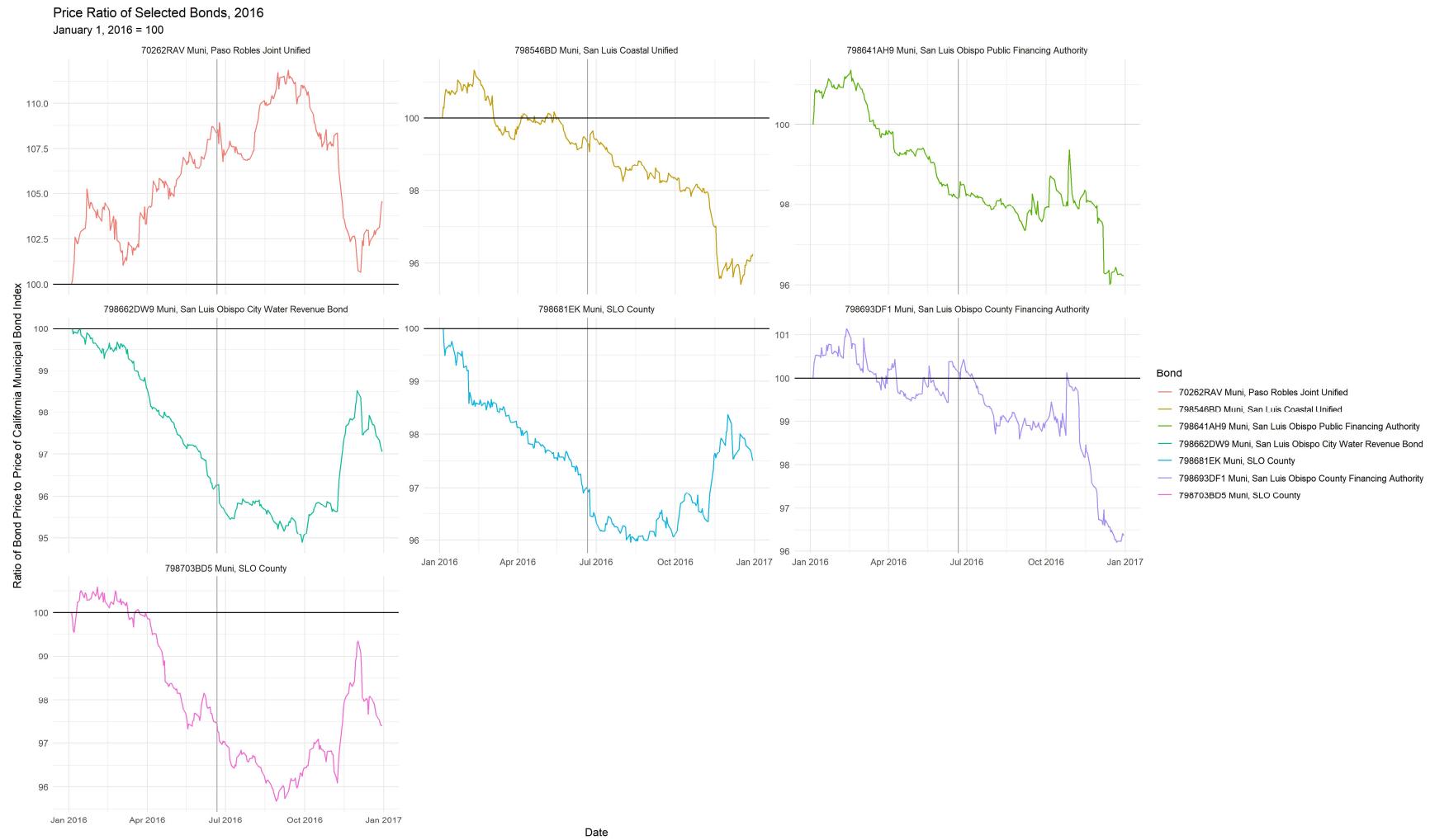


Figure 25: Normalized Price Ratios of San Luis Obispo County Municipal Bonds, 2016



Figure 26: Normalized Yield Spreads of San Luis Obispo County Municipal Bonds, 2016

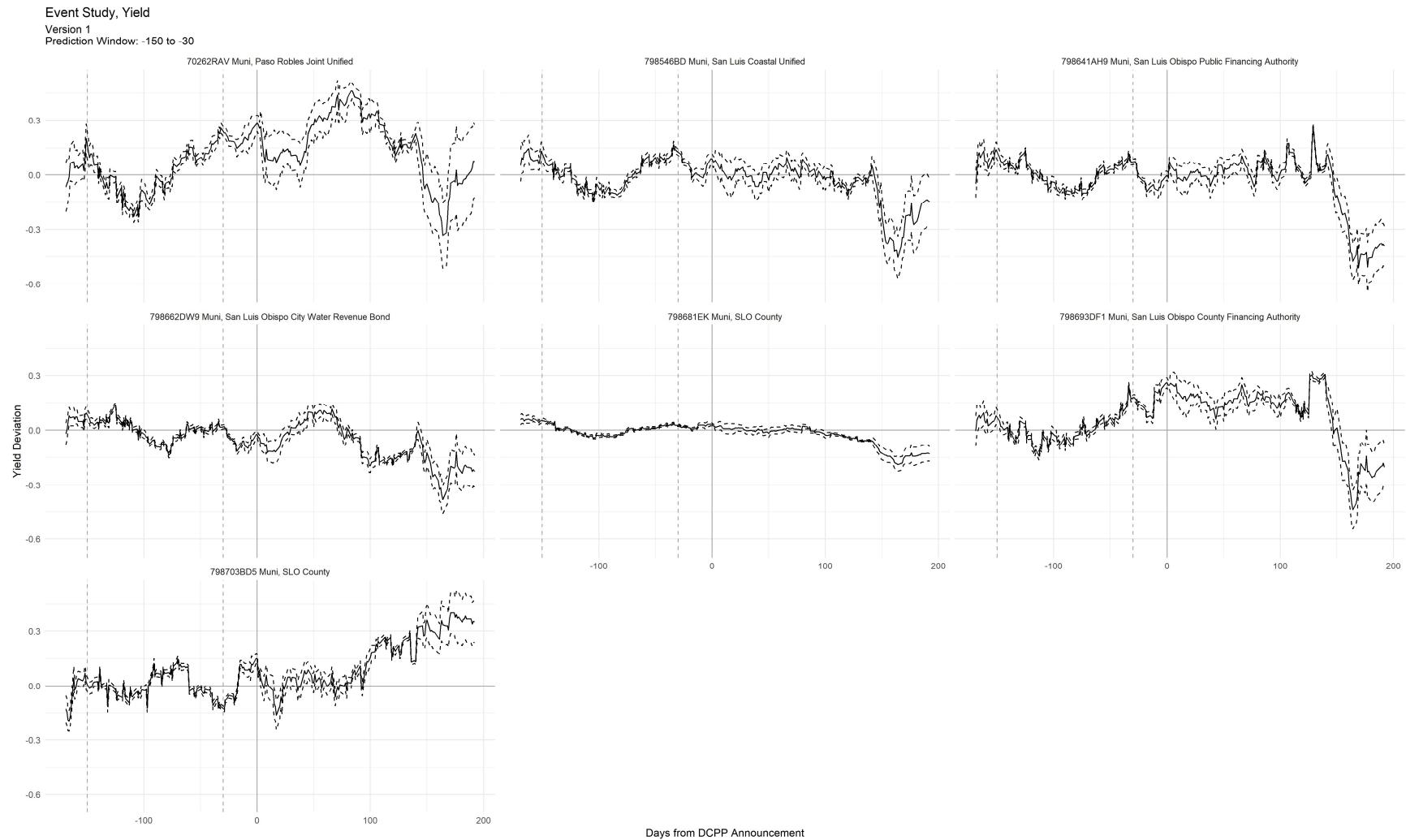


Figure 27: Version 1 Event Studies, Yield

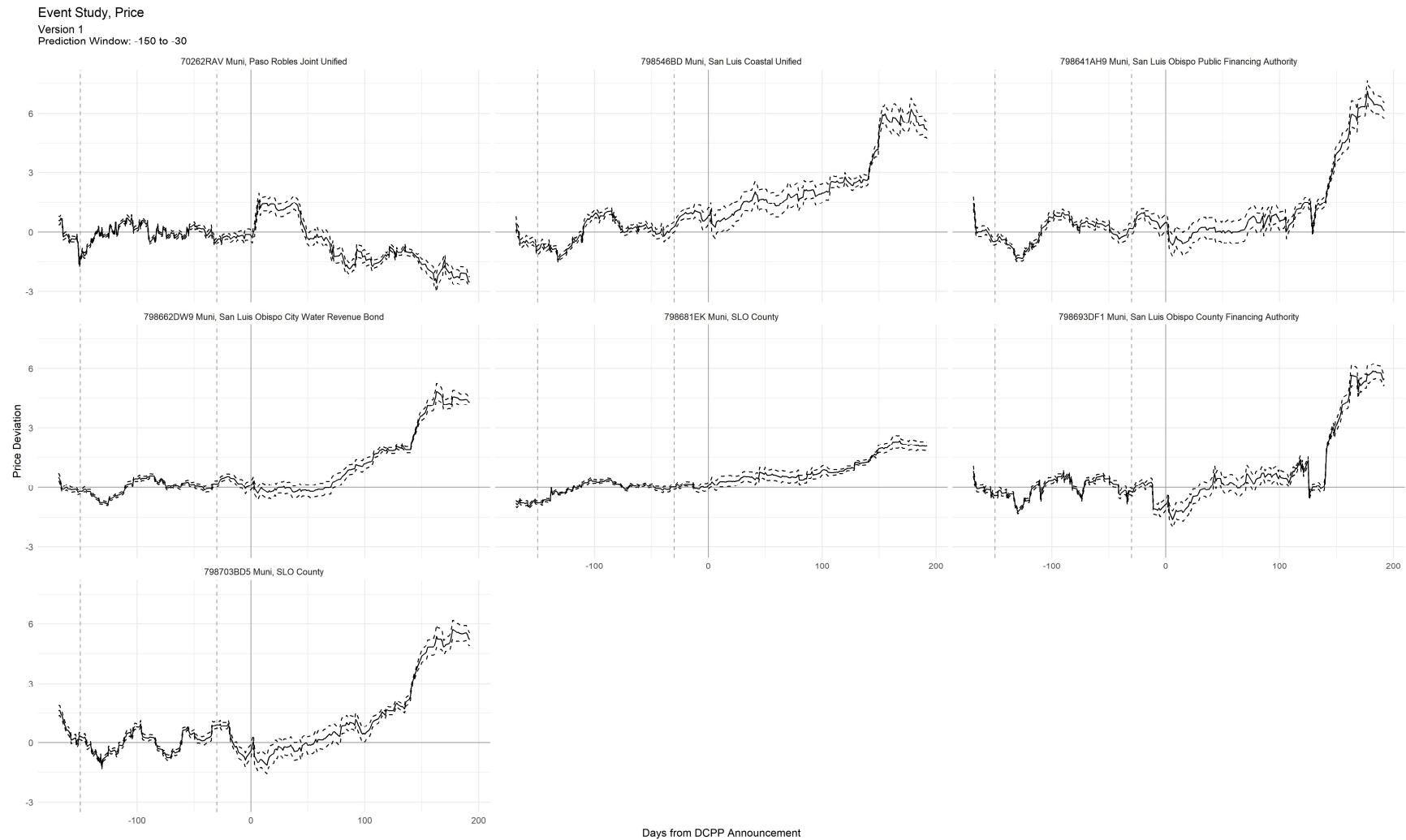


Figure 28: Version 1 Event Study, Price

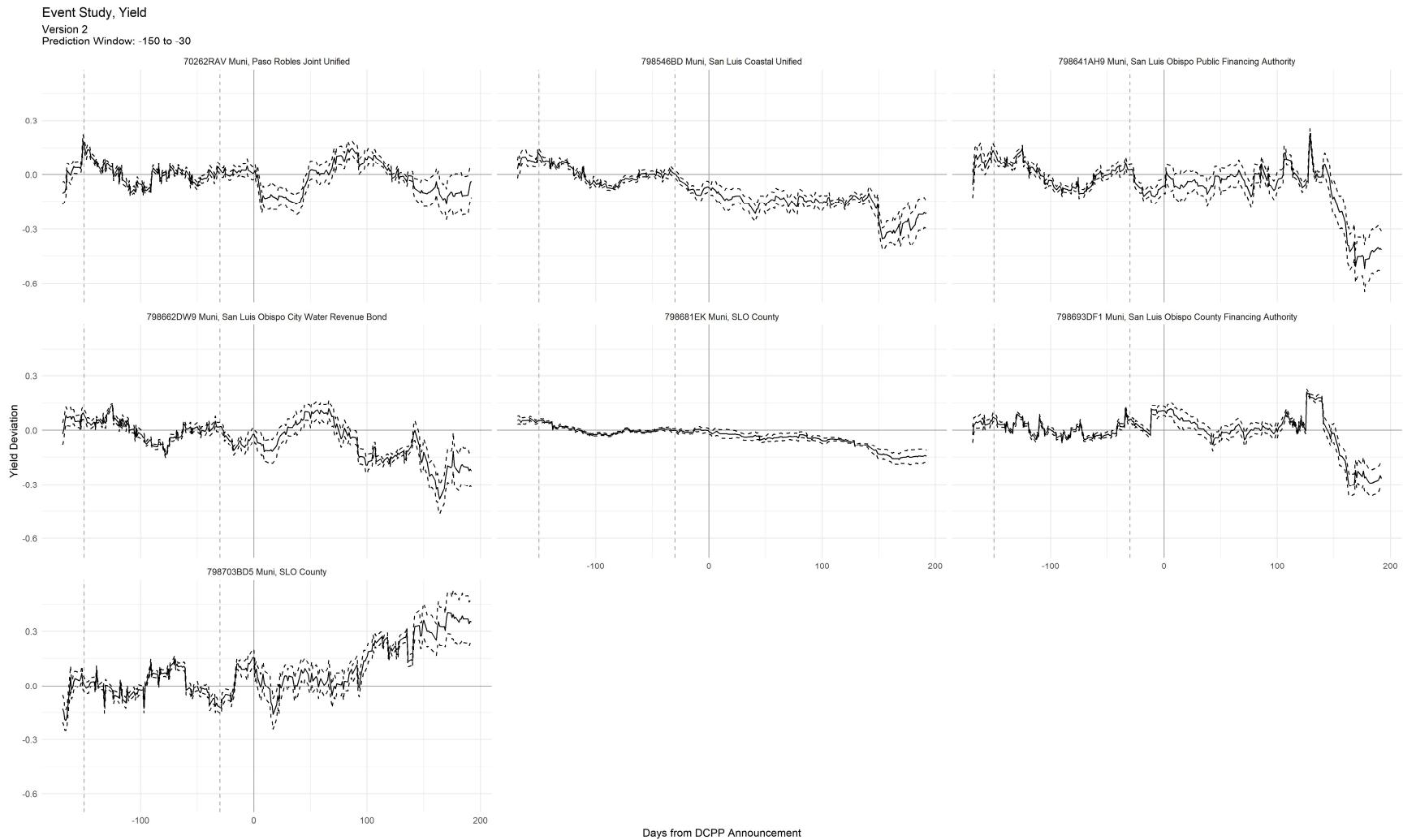


Figure 29: Version 2 Event Study, Yield

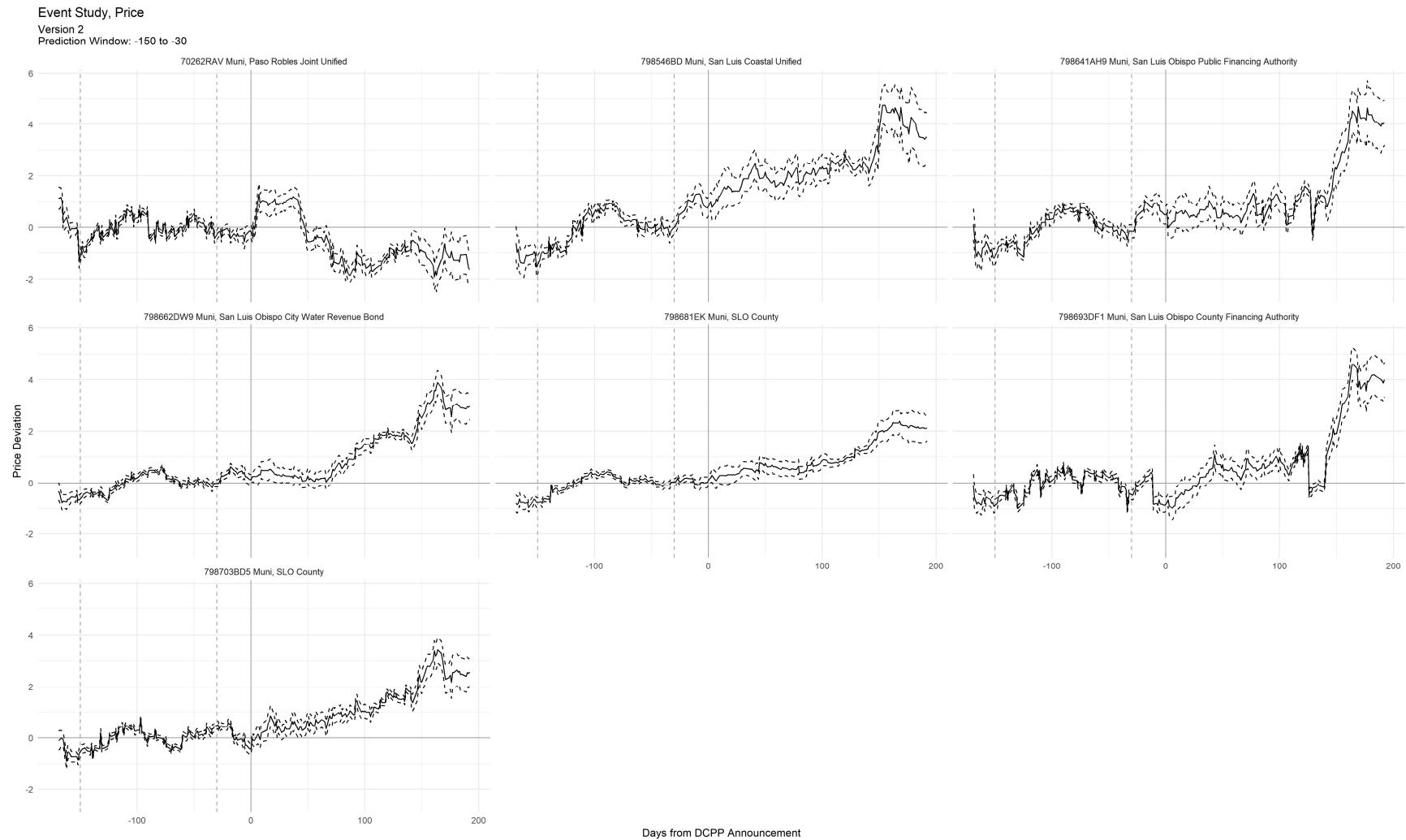


Figure 30: Version 2 Event Study, Price

5.4 Conclusions

Despite applying advanced econometric tools to high quality public financial data, we were unable to identify any statistically significant “announcement effect” attributable to DCPP closure. We take this result as indicating that financial markets do not anticipate a lasting or adverse impact on the overall SLO economy.

6 References

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7 Appendix 2 - Local Stakeholder Survey Questionnaire

The following tables contain the content of all questions asked in the DCPP Local Stakeholder Survey. Respondents filled out their responses online, but the question content is the same. All respondents answered the questions under "General Information" on p. 1. Their answer to the question "How would you describe your organization?" then decided whether they would answer the questions for "Private Business" (pp. 2 and 5), "Non-governmental Organizations" (pp. 3 and 6), or "Public Administration / Government" (pp. 4 and 7)

General Information (p. 1)						
What is your birth year?						
Open-Ended						
What is your organization's name (if applicable)?						
Open-Ended						
How would you describe your organization?						
<input type="checkbox"/> Private enterprise <input type="checkbox"/> Non-governmental organization <input type="checkbox"/> Public administration / government						
How would you classify your organization according to the North American Industry Classification System or NAICS?						
<input type="checkbox"/> 11: Agriculture, Forestry, Fishing and Hunting <input type="checkbox"/> 21: Mining, Quarrying, and Oil and Gas Extraction <input type="checkbox"/> 22: Utilities <input type="checkbox"/> 23: Construction <input type="checkbox"/> 31-33: Manufacturing <input type="checkbox"/> 42: Wholesale Trade <input type="checkbox"/> 44-45: Retail Trade <input type="checkbox"/> 48-49: Transportation and Warehousing <input type="checkbox"/> 51: Information <input type="checkbox"/> 52: Finance and Insurance <input type="checkbox"/> 53: Real Estate and Rental and Leasing <input type="checkbox"/> 54: Professional, Scientific, and Technical Services <input type="checkbox"/> 55: Management of Companies and Enterprises <input type="checkbox"/> 56: Administrative and Support and Waste Management and Remediation Services <input type="checkbox"/> 61: Educational Services <input type="checkbox"/> 62: Health Care and Social Assistance <input type="checkbox"/> 71: Arts, Entertainment, and Recreation <input type="checkbox"/> 72: Accommodation and Food Services <input type="checkbox"/> 81: Other Services (except Public Administration) <input type="checkbox"/> 92: Public Administration						
How would you describe your position?						
<input type="checkbox"/> Independent Individual <input type="checkbox"/> Owner <input type="checkbox"/> Administrator <input type="checkbox"/> Middle Management <input type="checkbox"/> Operations						

General Outlook, Private Business (p.2)					
Compared to this time last year (March 2018), has the number of full-time equivalent employees in your firm increased, decreased, or stayed the same?			Compared to this time five years ago (March 2014), has the number of full-time equivalent employees in your firm increased, decreased, or stayed the same?		
Decreased	0		Decreased	0	
Stayed the same	0.5		Stayed the same	0.5	
Increased	1		Increased	1	
Compared to this time last year (March 2018), has the number or total quantity of new orders to your firm increased, decreased, or stayed the same?			Compared to this time five years ago (March 2014), has the number or total quantity of new orders to your firm increased, decreased, or stayed the same?		
Decreased	0		Decreased	0	
Stayed the same	0.5		Stayed the same	0.5	
Increased	1		Increased	1	
Compared to this time last year (March 2018), were your firm's dollar sales higher or lower?			Compared to this time last year (March 2014), were your firm's dollar sales higher or lower?		
Decreased	0		Decreased	0	
Stayed the same	0.5		Stayed the same	0.5	
Increased	1		Increased	1	
Please indicate how much you agree or disagree with the following statements about San Luis Obispo County:					
<p>"San Luis Obispo County has a robust, vibrant economy."</p> <p>"Housing prices are having a negative impact on the local economy."</p> <p>"Marketing and attraction of job candidates is a persistent issue in the county."</p> <p>"Economic anchors like DCPP or CalPoly benefit the economy, but also allow county residents to be complacent about long-term growth challenges."</p> <p>"San Luis Obispo County suffers from an 'affordability' gap of low wages and high housing costs."</p>					
Options	Values	"Percent Agree" takes the percentage of respondents answering "Agree" or "Somewhat agree"			
Agree	4				
Somewhat agree	3				
Neither agree nor disagree	2				
Somewhat disagree	1				
Disagree	0				

General Outlook, Non-governmental Organizations (p.3)

How would you describe your organization's purpose?

Environmental								
Health								
Education								
Labor								
Community Action								
Economic Development								
Other (please specify)								

Please indicate how much you agree or disagree with the following statements about San Luis Obispo County:

"San Luis Obispo County has a robust, vibrant economy."								
"Housing prices are having a negative impact on the local economy."								
"Marketing and attraction of job candidates is a persistent issue in the county."								
"Economic anchors like DCPP or CalPoly benefit the economy, but also allow county residents to be complacent about long-term growth challenges."								
"San Luis Obispo County suffers from an 'affordability' gap of low wages and high housing costs."								

Options	Values	"Percent Agree" takes the percentage of respondents answering "Agree" or "Somewhat agree"
Agree	4	
Somewhat agree	3	
Neither agree nor disagree	2	
Somewhat disagree	1	
Disagree	0	

General Outlook, Public Administration / Government (p.4)

At what level of government would you place your organization?

Local								
State								
Federal								

Please indicate how much you agree or disagree with the following statements about San Luis Obispo County:

"San Luis Obispo County has a robust, vibrant economy."								
"Housing prices are having a negative impact on the local economy."								
"Marketing and attraction of job candidates is a persistent issue in the county."								
"Economic anchors like DCPP or CalPoly benefit the economy, but also allow county residents to be complacent about long-term growth challenges."								
"San Luis Obispo County suffers from an 'affordability' gap of low wages and high housing costs."								

Options	Values	"Percent Agree" takes the percentage of respondents answering "Agree" or "Somewhat agree"
Agree	4	
Somewhat agree	3	
Neither agree nor disagree	2	
Somewhat disagree	1	
Disagree	0	

Closure of the Diablo Canyon Power Plant, Private Business (p. 5)

On June 21, 2016, PG&E announced its decision to close the Diablo Canyon (Nuclear) Power Plant (DCPP) near Avila Beach in San Luis Obispo County. The plant's two reactors will be shut down in 2024 and 2025. DCPP employs around 1500 employees, has a local payroll of around \$200 million, and pays around \$26 million a year in unitary property tax. The following questions pertain to this closure.

Please identify the importance of the following concerns regarding the impact of the DCPP closure on your business:

Business Environment									
Labor Availability									
Material Costs									
Labor Costs									
Utility Costs									
Rental Rates									
Property Values									
Public Goods and Services									
Other (please specify)									

Please identify the importance of the following concerns regarding the impact of the DCPP closure on the local economy:

Economic uncertainty									
Loss of tax revenue									
Loss of jobs									
Emigration									
Electricity costs									
Other (please specify)									

Options	Values
Very important	3
Somewhat important	2
Not important	1

Following the closure, do you expect your firm's primary business to fare better, worse, or stay the same?

Better									
About the same									
Worse									

Please indicate how much you would either agree or disagree with the following statements about the Diablo Canyon Power Plant closure:

"The loss of this large local employer will have a severe negative impact on the local economy."

"The County is embedded in a diversified and robust regional economy. Decommissioning will open more opportunities for modernization and skill-intensive growth."

"Government services such as schools or public transit will be severely impacted by the loss of tax revenue."

"PG&E employees are active community members, losing them would have a substantial negative impact on the community."

"Heavy vehicle traffic from decommissioning will have a significant detrimental impact on local roads and economic activity."

Options	Values	
Agree	4	"Percent Agree" takes the percentage of respondents answering "Agree" or "Somewhat agree"
Somewhat agree	3	
Neither agree nor disagree	2	
Somewhat disagree	1	
Disagree	0	

On September 19, 2018, then-Governor Jerry Brown signed Senate Bill No. 1090, directing the California Public Utilities Commission to approve a settlement which includes \$85 million to mitigate the impacts of the closure (\$75 million distributed among local governments and \$10 million to be spent on economic development). The full text of the bill can be read [here](#). Prior to now, were you aware of this bill?

Yes

No

Various uses have been proposed for the \$10 million in economic development funds approved by SB 1090. Please indicate how you feel about some possible uses of these funds:

Job training programs for local workers

Marketing and recruitment of new workers and their families

Marketing and recruitment of new businesses

Retention programs for graduates of CalPoly SLO and Cuesta College

Investment incentives for technology clusters

Infrastructure investment (roads, public transit)

Budgetary adjustment assistance for local governments

Other (please specify)

Options	Values	
Agree	4	"Percent Agree" takes the percentage of respondents answering "Agree" or "Somewhat agree"
Somewhat agree	3	
Neither agree nor disagree	2	
Somewhat disagree	1	
Disagree	0	

The Diablo Canyon Power Plant sits on 12,000 acres of undeveloped land, with 14 miles of Pacific coastline between Montaña de Oro State Park and the City of Avila Beach. After the closure of DCPP, how would you rank the following general redevelopment configurations?

After announcing the closure, PG&E convened the Diablo Canyon Decommissioning Engagement Panel "to foster open and transparent dialogue between members of the local community and PG&E". Since its creation, the panel has held public meetings and workshops, conducted tours of Diablo Canyon lands, and published recommendations as to the decommissioning process. Prior to now, did you know of this panel's existence and activities?

Yes, I participated in the panel's activities.
Yes, I was aware of the panel but did not participate.
No, I was not aware.

The Diablo Canyon Decommissioning Engagement Panel published a set of recommendations on January 8, 2019. The recommendations are reproduced below, and the full report can be read [here](#). Please indicate your level of agreement or disagreement with these recommendations:

The decommissioning (decontamination) process should begin immediately upon shutdown with a goal of 10 years for completion of radiological decommissioning and decontamination, avoiding SAFSTOR (which allows up to 60-year delay in decontamination)

The health and safety of the community and the environmental quality of the area should be the primary consideration when evaluating cost-effective methods of decommissioning in order to save ratepayers money.

The 12,000 acres that surround the DCPP are a spectacular natural resource and need to be conserved in perpetuity while allowing for managed public access and use.

The 12,000 acres that surround the DCPP are a spectacular natural resource and need to be conserved in perpetuity while allowing for managed public access and use

The repurposing of facilities should be explored as a way to both reduce the amount of demolition materials created and create opportunities for new local jobs and economic development while considering public

The engagement panel should be in a form that would lead to the best possible recommendations on achieving a safe and effective decommissioning of the DCPP, including the disposition of Diablo Canyon Lands and Facilities.

Facilities							
Options		Values					
Agree		4	"Percent Agree" takes the percentage of respondents answering				
Somewhat agree		3	"Agree" or "Somewhat agree"				
Neither agree nor disagree		2					
Somewhat disagree		1					
Disagree		0					

Closure of the Diablo Canyon Power Plant, Non-governmental Organizations (p. 6)

On June 21, 2016, PG&E announced its decision to close the Diablo Canyon (Nuclear) Power Plant (DCPP) near Avila Beach in San Luis Obispo County. The plant's two reactors will be shut down in 2024 and 2025. DCPP employs around 1500 employees, has a local payroll of around \$200 million, and pays around \$26 million a year in unitary property tax. The following questions pertain to this closure.

Please identify the importance of the following concerns regarding the impact of the DCPP closure on the local economy:

Economic uncertainty						
Loss of tax revenue						
Loss of jobs						
Emigration						
Electricity costs						
Other (please specify)						

Options	Values
Very important	3
Somewhat important	2
Not important	1

Following the closure, do you expect your firm's primary business to fare better, worse, or stay the same?

Better						
About the same						
Worse						

Please indicate how much you would either agree or disagree with the following statements about the Diablo Canyon Power Plant closure:

"The loss of this large local employer will have a severe negative impact on the local economy."						
"The County is embedded in a diversified and robust regional economy. Decommissioning will open more opportunities for modernization and skill-intensive growth."						
"Government services such as schools or public transit will be severely impacted by the loss of tax revenue."						
"PG&E employees are active community members, losing them would have a substantial negative impact on the community."						
"Heavy vehicle traffic from decommissioning will have a significant detrimental impact on local roads and economic activity."						
Options	Values					
Agree	4	"Percent Agree" takes the percentage of respondents answering "Agree" or "Somewhat agree"				
Somewhat agree	3					
Neither agree nor disagree	2					
Somewhat disagree	1					
Disagree	0					

On September 19, 2018, then-Governor Jerry Brown signed Senate Bill No. 1090, directing the California Public Utilities Commission to approve a settlement which includes \$85 million to mitigate the impacts of the closure (\$75 million distributed among local governments and \$10 million to be spent on economic development). The full text of the bill can be read here. Prior to now, were you aware of this bill?

Yes							
No							

Various uses have been proposed for the \$10 million in economic development funds approved by SB 1090. Please indicate how you feel about some possible uses of these funds:

Job training programs for local workers							
Marketing and recruitment of new workers and their families							
Marketing and recruitment of new businesses							
Retention programs for graduates of CalPoly SLO and Cuesta College							
Investment incentives for technology clusters							
Infrastructure investment (roads, public transit)							
Budgetary adjustment assistance for local governments							
Other (please specify)							
Options		Values					
Agree		4					
Somewhat agree		3					
Neither agree nor disagree		2					
Somewhat disagree		1					
Disagree		0					

The Diablo Canyon Power Plant sits on 12,000 acres of undeveloped land, with 14 miles of Pacific coastline between Montaña de Oro State Park and the City of Avila Beach. After the closure of DCPP, how would you rank the following general redevelopment configurations?

Full Recreation / Conservation							
Partial Recreation / Conservation							
Partial Commercialization							
Partial Residential							
Full Commercialization							
Full Residential							
Full Mixed Commercial / Residential							

After announcing the closure, PG&E convened the Diablo Canyon Decommissioning Engagement Panel "to foster open and transparent dialogue between members of the local community and PG&E". Since its creation, the panel has held public meetings and workshops, conducted tours of Diablo Canyon lands, and published recommendations as to the decommissioning process. Prior to now, did you know of this panel's existence and activities?

Yes, I participated in the panel's activities.							
Yes, I was aware of the panel but did not participate.							
No, I was not aware.							

The Diablo Canyon Decommissioning Engagement Panel published a set of recommendations on January 8, 2019. The recommendations are reproduced below, and the full report can be read here. Please indicate your level of agreement or disagreement with these recommendations:

The decommissioning (decontamination) process should begin immediately upon shutdown with a goal of 10 years for completion of radiological decommissioning and decontamination, avoiding SAFSTOR (which allows up to 60-year delay in decontamination)											
The health and safety of the community and the environmental quality of the area should be the primary consideration when evaluating cost-effective methods of decommissioning in order to save ratepayers money											
The 12,000 acres that surround the DCPP are a spectacular natural resource and need to be conserved in perpetuity while allowing for managed public access and use											
The repurposing of facilities should be explored as a way to both reduce the amount of demolition materials created and create opportunities for new local jobs and economic development while considering public safety, traffic concerns and the environmental quality of the region											
The engagement panel should be in a form that would lead to the best possible recommendations on achieving a safe and effective decommissioning of the DCPP, including the disposition of Diablo Canyon Lands and Facilities											
Options											
Agree					4	"Percent Agree" takes the percentage of respondents answering "Agree" or "Somewhat agree"					
Somewhat agree					3						
Neither agree nor disagree					2						
Somewhat disagree					1						
Disagree					0						

Closure of the Diablo Canyon Power Plant, Public Administration / Government (p. 7)

On June 21, 2016, PG&E announced its decision to close the Diablo Canyon (Nuclear) Power Plant (DCPP) near Avila Beach in San Luis Obispo County. The plant's two reactors will be shut down in 2024 and 2025. DCPP employs around 1500 employees, has a local payroll of around \$200 million, and pays around \$26 million a year in unitary property tax. The following questions pertain to this closure.

Please identify the importance of the following concerns regarding the impact of the DCPP closure on the local economy:

Economic uncertainty						
Loss of tax revenue						
Loss of jobs						
Emigration						
Electricity costs						
Other (please specify)						

Options	Values
Very important	3
Somewhat important	2
Not important	1

Following the closure, do you expect your firm's primary business to fare better, worse, or stay the same?

Better						
About the same						
Worse						

Please indicate how much you would either agree or disagree with the following statements about the Diablo Canyon Power Plant closure:

"The loss of this large local employer will have a severe negative impact on the local economy."						
"The County is embedded in a diversified and robust regional economy. Decommissioning will open more opportunities for modernization and skill-intensive growth."						
"Government services such as schools or public transit will be severely impacted by the loss of tax revenue."						
"PG&E employees are active community members, losing them would have a substantial negative impact on the community."						
"Heavy vehicle traffic from decommissioning will have a significant detrimental impact on local roads and economic activity."						

Options	Values	
Agree	4	"Percent Agree" takes the percentage of respondents answering "Agree" or "Somewhat agree"
Somewhat agree	3	
Neither agree nor disagree	2	
Somewhat disagree	1	
Disagree	0	

On September 19, 2018, then-Governor Jerry Brown signed Senate Bill No. 1090, directing the California Public Utilities Commission to approve a settlement which includes \$85 million to mitigate the impacts of the closure (\$75 million distributed among local governments and \$10 million to be spent on economic development). The full text of the bill can be read here. Prior to now, were you aware of this bill?

Yes							
No							

Various uses have been proposed for the \$10 million in economic development funds approved by SB 1090. Please indicate how you feel about some possible uses of these funds:

Job training programs for local workers							
Marketing and recruitment of new workers and their families							
Marketing and recruitment of new businesses							
Retention programs for graduates of CalPoly SLO and Cuesta College							
Investment incentives for technology clusters							
Infrastructure investment (roads, public transit)							
Budgetary adjustment assistance for local governments							
Other (please specify)							
Options		Values					
Agree		4	"Percent Agree" takes the percentage of respondents answering "Agree" or "Somewhat agree"				
Somewhat agree		3					
Neither agree nor disagree		2					
Somewhat disagree		1					
Disagree		0					

The Diablo Canyon Power Plant sits on 12,000 acres of undeveloped land, with 14 miles of Pacific coastline between Montaña de Oro State Park and the City of Avila Beach. After the closure of DCPP, how would you rank the following general redevelopment configurations?

Full Recreation / Conservation							
Partial Recreation / Conservation							
Partial Commercialization							
Partial Residential							
Full Commercialization							
Full Residential							
Full Mixed Commercial / Residential							

After announcing the closure, PG&E convened the Diablo Canyon Decommissioning Engagement Panel "to foster open and transparent dialogue between members of the local community and PG&E". Since its creation, the panel has held public meetings and workshops, conducted tours of Diablo Canyon lands, and published recommendations as to the decommissioning process. Prior to now, did you know of this panel's existence and activities?

Yes, I participated in the panel's activities.							
Yes, I was aware of the panel but did not participate.							
No, I was not aware.							

The Diablo Canyon Decommissioning Engagement Panel published a set of recommendations on January 8, 2019. The recommendations are reproduced below, and the full report can be read here. Please indicate your level of agreement or disagreement with these recommendations:

The decommissioning (decontamination) process should begin immediately upon shutdown with a goal of 10 years for completion of radiological decommissioning and decontamination, avoiding SAFSTOR (which allows up to 60-year delay in decontamination)											
The health and safety of the community and the environmental quality of the area should be the primary consideration when evaluating cost-effective methods of decommissioning in order to save ratepayers money											
The 12,000 acres that surround the DCPP are a spectacular natural resource and need to be conserved in perpetuity while allowing for managed public access and use											
The repurposing of facilities should be explored as a way to both reduce the amount of demolition materials created and create opportunities for new local jobs and economic development while considering public safety, traffic concerns and the environmental quality of the region											
The engagement panel should be in a form that would lead to the best possible recommendations on achieving a safe and effective decommissioning of the DCPP, including the disposition of Diablo Canyon Lands and Facilities											
Options			Values								
Agree			4	"Percent Agree" takes the percentage of respondents answering "Agree" or "Somewhat agree"							
Somewhat agree			3								
Neither agree nor disagree			2								
Somewhat disagree			1								
Disagree			0								

8 Appendix 1 – Additional Macroeconomic Results

8.1 Component Impact Estimates for the Core Scenarios

This appendix contains a variety of supplemental results, including more detailed impacts for the core scenario (\$4.8 billion decommissioning budget), and spatial detail for impacts in Santa Barbara County and the rest of California.

8.1.1 Impact Decomposition for SB 1090 ESMF

Table A - 56: Annual Economic Impact of SB 1090 ESMF and DCPP Employee Retention, San Luis Obispo County, (2016 Dollars Annually for 7 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	96	\$7,239,070	\$9,002,092
Indirect Effect	3	\$145,616	\$451,957
Induced Effect	249	\$10,160,704	\$31,525,141
Total Effect	349	\$17,545,391	\$40,979,190

Table A - 57: Annual Economic Impact of SB 1090 ESMF and DCPP Employee Retention, Santa Barbara County, (2016 Dollars Annually for 7 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	1	\$27,018	\$77,198
Induced Effect	29	\$1,484,205	\$4,259,754
Total Effect	30	\$1,511,223	\$4,336,953

Table A - 58: Annual Economic Impact of SB 1090 ESMF and DCPP Employee Retention, Rest of California (2016 Dollars Annually for 7 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0.00	\$0	\$0
Indirect Effect	1	\$106,993	\$286,160
Induced Effect	34	\$2,336,880	\$6,263,058
Total Effect	35	\$2,443,872	\$6,549,218

8.1.2 Impact Decomposition for SB 1090 EDF

**Table A - 59: Annual Economic Impact of SB 1090 EDF, San Luis Obispo County,
(2016 Dollars for 1 year)**

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	53	\$3,192,810	\$8,383,264
Indirect Effect	15	\$704,712	\$2,167,208
Induced Effect	18	\$734,990	\$2,282,487
Total Effect	87	\$4,632,512	\$12,832,959

**Table A - 60: Annual Economic Impact of SB 1090 EDF, Santa Barbara County,
(2016 Dollars Annually for 1 Year)**

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	1	\$100,046	\$281,726
Induced Effect	1	\$46,520	\$135,929
Total Effect	2	\$146,56	\$417,656

**Table A - 61: Annual Economic Impact of SB 1090 EDF, Rest of California (2016
Dollars Annually for 1 Year)**

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	8	\$557,264	\$1,735,238
Induced Effect	5	\$323,491	\$905,863
Total Effect	13	\$880,756	\$2,641,101

8.1.3 Impact Decomposition for DCPP Closure

Table A - 62: Annual Economic Impact of DCPP Closure, San Luis Obispo County, (2016 Dollars Annually)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	-1,397	-\$226,176,965	-\$600,868,412
Indirect Effect	-453	-\$20,126,701	-\$66,081,131
Induced Effect	-1,059	-\$43,143,292	-\$133,868,350
Total Effect	-2,908	-\$289,446,957	-\$800,817,893

Table A - 63: Annual Economic Impact of DCPP Closure, Santa Barbara County, (2016 Dollars Annually)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	-13	-\$984,650	-\$2,582,362
Induced Effect	-134	-\$6,768,208	-\$19,399,083
Total Effect	-147	-\$7,752,858	-\$21,981,445

Table A - 64: Annual Economic Impact of DCPP Closure, Rest of California (2016 Dollars Annually)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	-46	-\$3,470,403	-\$9,044,158
Induced Effect	-162	-\$10,887,372	-\$29,411,008
Total Effect	-208	-\$14,357,775	-\$38,455,166

8.1.4 Impact Decomposition for DCPP Decommissioning – Low Budget Scenario

Table A - 65: Annual Economic Impact of Requested DCPP Decommissioning Expenditures, San Luis Obispo County, (2016 Dollars Annually for 10 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	3,042	\$169,366,348	\$479,428,135
Indirect Effect	913	\$41,693,740	\$120,208,073
Induced Effect	983	\$40,004,932	\$124,191,337
Total Effect	4,938	\$251,065,018	\$723,827,545

Table A- 66: Annual Economic Impact of Requested DCPP Decommissioning Expenditures, Santa Barbara County, (2016 Dollars Annually for 10 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	96	\$6,012,610	\$16,556,170
Induced Effect	51	\$2,649,689	\$7,728,746
Total Effect	147	\$8,662,298	\$24,284,916

Table A - 67: Annual Economic Impact of Requested DCPP Decommissioning Expenditures, Rest of California (2016 Dollars Annually for 10 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	404	\$29,747,878	\$82,831,010
Induced Effect	286	\$17,459,502	\$48,868,417
Total Effect	690	\$47,207,380	\$131,699,428

Table A - 68: Total Economic Impact of Approved DCPP Decommissioning Expenditures, San Luis Obispo County (2016 Dollars Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$269,678,326	\$67,617,041	\$69,857,627	\$407,152,994
1	Waste management and remediation services	\$82,826,944	\$7,478,022	\$258,717	\$90,563,683
2	Construction of other new nonresidential structures	\$53,983,504	\$0	\$0	\$53,983,504
3	Electric power generation - Nuclear	\$53,033,149	\$10	\$9	\$53,033,168
4	Architectural, engineering, and related services	\$37,215,213	\$5,232,786	\$365,695	\$42,813,694
5	Investigation and security services	\$22,574,920	\$143,156	\$55,677	\$22,773,753
6	Real estate	\$874,294	\$6,147,830	\$6,032,779	\$13,054,903
7	Owner-occupied dwellings	\$0	\$0	\$11,834,062	\$11,834,062
8	Wholesale trade	\$2,713,609	\$4,215,740	\$2,628,934	\$9,558,284
9	Natural gas distribution	\$3,912,234	\$154,396	\$169,776	\$4,236,406
10	Petroleum refineries	\$0	\$3,482,023	\$656,922	\$4,138,945
Total all other categories		\$12,544,460	\$40,763,078	\$47,855,054	\$101,162,593

Table A - 69: Total FTE Jobs from Approved DCPP Decommissioning Expenditures, San Luis Obispo County (Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	1,711	513.49	552.93	2,777.53
1	Investigation and security services	564	3.57	1.39	568.57
2	Waste management and remediation services	368	33.26	1.15	402.79
3	Construction of other new nonresidential structures	391	0.00	0.00	390.57
4	Architectural, engineering, and related services	260	36.56	2.55	299.11
5	Real estate	6	38.97	38.24	82.74
6	Full-service restaurants	0.00	31.32	34.28	65.60
7	Wholesale trade	13	20.92	13.04	47.42
8	Electric power generation - Nuclear	44	0.00	0.00	44.19
9	Limited-service restaurants	0	8.60	30.52	39.12
10	Environmental and other technical consulting services	23	12.37	1.30	37.15
Total all other categories		42	327.94	430.47	800.27

Table A - 70: State and Local Tax Impact of Approved DCPP Decommissioning Expenditures, San Luis Obispo County (2016 Dollars Annually for 10 years)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	\$35,232
Social Ins Tax- Employee Contribution	\$215,305	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	\$451,002	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	\$9,579,930	\$0	\$0
TOPI: Property Tax	\$0	\$0	\$8,504,885	\$0	\$0
TOPI: Motor Vehicle Lic	\$0	\$0	\$185,764	\$0	\$0
TOPI: Severance Tax	\$0	\$0	\$8,765	\$0	\$0
TOPI: Other Taxes	\$0	\$0	\$864,875	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	\$113,756	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	\$628,284
Personal Income Tax	\$0	\$0	\$0	\$4,213,954	\$0
Personal Tax:					
NonTaxes (Fines- Fees	\$0	\$0	\$0	\$586,600	\$0
Vehicle License	\$0	\$0	\$0	\$145,399	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	\$64,887	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	\$28,564	\$0
Total State and Local Tax	\$666,307	\$0	\$19,257,975	\$5,039,404	\$663,517

Table A - 71: Total Economic Impact of Approved DCPP Decommissioning Expenditures, Santa Barbara County (2016 Dollars Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$0	\$9,312,845	\$4,347,420	\$13,660,265
1	Wholesale trade	\$0	\$1,513,382	\$279,032	\$1,792,414
2	Real estate	\$0	\$941,654	\$635,577	\$1,577,231
3	Other local government enterprises	\$0	\$1,166,372	\$196,544	\$1,362,917
4	Scenic and sightseeing transportation and support activities for transportation	\$0	\$503,084	\$50,414	\$553,499
5	Office administrative services	\$0	\$368,557	\$57,098	\$425,656
6	Lessors of nonfinancial intangible assets	\$0	\$362,950	\$60,494	\$423,443
7	Extraction of natural gas and crude petroleum	\$0	\$327,591	\$48,164	\$375,754
8	Owner-occupied dwellings	\$0	\$0	\$359,953	\$359,953
9	Marketing research and all other miscellaneous professional, scientific, and technical services	\$0	\$248,773	\$26,355	\$275,128
10	Cable and other subscription programming	\$0	\$147,092	\$116,311	\$263,403
	Total all other categories	\$0	\$3,733,391	\$2,517,477	\$6,250,867

Table A - 72: Total Jobs from Approved DCPP Decommissioning Expenditures, Santa Barbara County (Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	0	54	29	83
1	Real estate	0	4	3	7
2	Wholesale trade	0	6	1	7
3	Office administrative services	0	4	1	5
4	Marketing research and all other miscellaneous professional, scientific, and technical services	0	4	0	4
5	Other local government enterprises	0	3	1	4
6	Scenic and sightseeing transportation and support activities for transportation	0	3	0	3
7	Employment services	0	3	1	3
8	Accounting, tax preparation, bookkeeping, and payroll services	0	2	1	3
9	Services to buildings	0	1	1	2
10	Full-service restaurants	0	1	1	2
Total all other categories					

Table A - 73: State and Local Tax Impact of Approved DCPP Decommissioning Expenditures, Santa Barbara County (2016 Dollars Annually for 10 years)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	\$1,372
Social Ins Tax- Employee Contribution	\$7,127	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	\$14,929	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	\$255,214	\$0	\$0
TOPI: Property Tax	\$0	\$0	\$246,245	\$0	\$0
TOPI: Motor Vehicle Lic	\$0	\$0	\$5,999	\$0	\$0
TOPI: Severance Tax	\$0	\$0	\$284	\$0	\$0
TOPI: Other Taxes	\$0	\$0	\$34,376	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	\$3,443	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	\$23,668
Income Tax	\$0	\$0	\$0	\$151,182	\$0
Personal Tax: NonTaxes (Fines- Fees	\$0	\$0	\$0	\$21,177	\$0
Vehicle License	\$0	\$0	\$0	\$5,197	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	\$2,072	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	\$1,028	\$0
Total State and Local Tax	\$22,056	\$0	\$545,561	\$180,656	\$25,040

Table A - 74: Total Economic Impact of Approved DCPP Decommissioning Expenditures, Rest of California (2016 Dollars Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$0	\$46,592,443	\$27,488,485	\$74,080,928
1	Employment services	\$0	\$4,269,370	\$870,002	\$5,139,372
2	Management of companies and enterprises	\$0	\$3,161,165	\$1,097,975	\$4,259,139
3	Wholesale trade	\$0	\$2,290,010	\$1,165,842	\$3,455,851
4	Real estate	\$0	\$909,425	\$1,439,849	\$2,349,274
5	Petroleum refineries	\$0	\$1,684,062	\$307,863	\$1,991,925
6	Owner-occupied dwellings	\$0	\$0	\$1,971,567	\$1,971,567
7	Wireless telecommunications carriers (except satellite)	\$0	\$1,311,757	\$623,516	\$1,935,272
8	Other basic inorganic chemical manufacturing	\$0	\$1,872,800	\$7,576	\$1,880,377
9	Legal services	\$0	\$1,198,864	\$542,368	\$1,741,232
10	Internet publishing and broadcasting and web search portals	\$0	\$1,193,211	\$460,432	\$1,653,643
	Total all other categories	\$0	\$28,701,780	\$19,001,495	\$47,703,275

Table A - 75: Total FTE Jobs from Approved DCPP Decommissioning Expenditures, Rest of California (Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	0	227	161	388
1	Employment services	0	52	11	62
2	Management of companies and enterprises	0	12	4	16
3	Wholesale trade	0	9	5	14
4	Investigation and security services	0	7	2	10
5	Warehousing and storage	0	5	3	9
6	Real estate	0	3	5	9
7	Other financial investment activities	0	2	6	8
8	Legal services	0	6	3	8
9	Full-service restaurants	0	2	6	8
10	Truck transportation	0	5	2	7
	Total all other categories				

Table A - 76: State and Local Tax Impact of Approved DCPP Decommissioning Expenditures, Rest of California (Annually for 10 years)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	\$8,619
Social Ins Tax- Employee Contribution	\$44,501	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	\$93,215	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	\$1,063,923	\$0	\$0
TOPI: Property Tax	\$0	\$0	\$874,490	\$0	\$0
TOPI: Motor Vehicle Lic	\$0	\$0	\$24,143	\$0	\$0
TOPI: Severance Tax	\$0	\$0	\$1,148	\$0	\$0
TOPI: Other Taxes	\$0	\$0	\$158,380	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	\$30,103	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	\$155,096
Personal Tax: Income Tax	\$0	\$0	\$0	\$853,328	\$0
Personal Tax: NonTaxes (Fines- Fees	\$0	\$0	\$0	\$140,713	\$0
Personal Tax: Motor Vehicle License	\$0	\$0	\$0	\$29,241	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	\$10,274	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	\$5,794	\$0
Total State and Local Tax	\$137,716	\$0	\$2,152,187	\$1,039,349	\$163,715

Table A - 77: Total Economic Impact of Upper Bound DCPP Decommissioning Expenditures, San Luis Obispo County (2016 Dollars Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$599,285,169	\$150,260,091	\$155,239,172	\$904,784,432
1	Waste management and remediation services	\$184,059,875	\$16,617,827	\$574,928	\$201,252,629
2	Construction of other new nonresidential structures	\$119,963,342	\$0	\$0	\$119,963,342
3	Electric power generation - Nuclear	\$117,851,442	\$23	\$20	\$117,851,484
4	Architectural, engineering, and related services	\$82,700,474	\$11,628,413	\$812,657	\$95,141,543
5	Investigation and security services	\$50,166,489	\$318,125	\$123,726	\$50,608,340
6	Real estate	\$1,942,875	\$13,661,846	\$13,406,177	\$29,010,896
7	Owner-occupied dwellings	\$0	\$0	\$26,297,916	\$26,297,916
8	Wholesale trade	\$6,030,243	\$9,368,310	\$5,842,076	\$21,240,630
9	Natural gas distribution	\$8,693,853	\$343,103	\$377,280	\$9,414,236
10	Petroleum refineries	\$0	\$7,737,828	\$1,459,827	\$9,197,655
Total all other categories		\$27,876,578	\$90,584,618	\$106,344,566	\$224,805,762

Table A - 78: Total FTE Jobs from Upper Bound DCPP Decommissioning Expenditures, San Luis Obispo County (Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	3,802	1141	1229	6172
1	Investigation and security services	1252	8	3	1264
2	Waste management and remediation services	819	74	3	895
3	Construction of other new nonresidential structures	868	0	0	868
4	Architectural, engineering, and related services	578	81	6	665
5	Real estate	12	87	85	184
6	Full-service restaurants	0	70	76	146
7	Wholesale trade	30	46	29	105
8	Electric power generation - Nuclear	98	0	0	98
9	Limited-service restaurants	0	19	68	87
10	Environmental and other technical consulting services	52	28	3	83
Total all other categories					

Table A - 79: State and Local Tax Impact of Upper Bound DCPP Decommissioning Expenditures, San Luis Obispo County (2016 Dollars Annually for 10 years)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	\$78,294
Social Ins Tax- Employee Contribution	\$478,455	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	\$1,002,227	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	\$21,288,734	\$0	\$0
TOPI: Property Tax	\$0	\$0	\$18,899,745	\$0	\$0
TOPI: Vehicle License	\$0	\$0	\$412,809	\$0	\$0
TOPI: Severance Tax	\$0	\$0	\$19,478	\$0	\$0
TOPI: Other Taxes	\$0	\$0	\$1,921,946	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	\$252,791	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	\$1,396,187
Personal Income Tax	\$0	\$0	\$0	\$9,364,343	\$0
Personal Tax: NonTaxes (Fines- Fees	\$0	\$0	\$0	\$1,303,556	\$0
Personal Tax: Vehicle Licenseense	\$0	\$0	\$0	\$323,109	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	\$144,194	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	\$63,476	\$0
Total State and Local Tax	\$1,480,682	\$0	\$42,795,501	\$11,198,675	\$1,474,482

Table A - 80: Total Economic Impact of Upper Bound DCPP Decommissioning Expenditures, Santa Barbara County (2016 Dollars Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$0	\$20,695,212	\$9,660,933	\$30,356,145
1	Wholesale trade	\$0	\$3,363,071	\$620,072	\$3,983,142
2	Real estate	\$0	\$2,092,565	\$1,412,393	\$3,504,957
3	Other local government enterprises	\$0	\$2,591,939	\$436,766	\$3,028,706
4	Scenic and sightseeing transportation and support activities for transportation	\$0	\$1,117,965	\$112,032	\$1,229,997
5	Office administrative services	\$0	\$819,017	\$126,885	\$945,902
6	Lessors of nonfinancial intangible assets	\$0	\$806,555	\$134,432	\$940,985
7	Extraction of natural gas and crude petroleum	\$0	\$727,980	\$107,031	\$835,010
8	Owner-occupied dwellings	\$0	\$0	\$799,896	\$799,896
9	Marketing research and all other miscellaneous professional, scientific, and technical services	\$0	\$552,828	\$58,568	\$611,396
10	Cable and other subscription programming	\$0	\$326,871	\$258,470	\$585,339
	Total all other categories	\$0	\$8,296,425	\$5,594,393	\$13,890,816

Table A - 81: Total Jobs from Upper Bound DCPP Decommissioning Expenditures, Santa Barbara County (Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	0	119	64	183
1	Real estate	0	10	7	17
2	Wholesale trade	0	14	3	16
3	Office administrative services	0	9	1	11
4	Marketing research and all other miscellaneous professional, scientific, and technical services	0	9	1	10
5	Other local government enterprises	0	8	1	9
6	Scenic and sightseeing transportation and support activities for transportation	0	7	1	8
7	Employment services	0	6	1	7
8	Accounting, tax preparation, bookkeeping, and payroll services	0	5	1	6
9	Services to buildings	0	3	2	5
10	Full-service restaurants	0	1	2	4
	Total all other categories				

Table A - 82: State and Local Tax Impact of Upper Bound DCPP Decommissioning Expenditures, Santa Barbara County (2016 Dollars Annually for 10 years)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	\$3,048
Social Ins Tax- Employee Contribution	\$15,837	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	\$33,176	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	\$567,143	\$0	\$0
TOPI: Property Tax	\$0	\$0	\$547,212	\$0	\$0
TOPI: Vehicle License	\$0	\$0	\$13,331	\$0	\$0
TOPI: Severance Tax	\$0	\$0	\$632	\$0	\$0
TOPI: Other Taxes	\$0	\$0	\$76,391	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	\$7,652	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	\$52,596
Personal Income Tax	\$0	\$0	\$0	\$335,960	\$0
Personal Tax: NonTaxes (Fines- Fees	\$0	\$0	\$0	\$47,060	\$0
Personal Tax: Vehicle Licenseense	\$0	\$0	\$0	\$11,549	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	\$4,604	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	\$2,285	\$0
Total State and Local Tax	\$49,013	\$0	\$1,212,357	\$401,457	\$55,644

Table A - 83: Total Economic Impact of Upper Bound DCPP Decommissioning Expenditures, Rest of California (2016 Dollars Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total	\$0	\$103,538,763	\$61,085,522	\$164,624,285
1	Employment services	\$0	\$9,487,490	\$1,933,338	\$11,420,828
2	Management of companies and enterprises	\$0	\$7,024,811	\$2,439,945	\$9,464,754
3	Wholesale trade	\$0	\$5,088,911	\$2,590,760	\$7,679,669
4	Real estate	\$0	\$2,020,946	\$3,199,664	\$5,220,609
5	Petroleum refineries	\$0	\$3,742,359	\$684,141	\$4,426,500
6	Owner-occupied dwellings	\$0	\$0	\$4,381,260	\$4,381,260
7	Wireless telecommunications carriers (except satellite)	\$0	\$2,915,015	\$1,385,591	\$4,300,605
8	Other basic inorganic chemical manufacturing	\$0	\$4,161,779	\$16,836	\$4,178,615
9	Legal services	\$0	\$2,664,143	\$1,205,262	\$3,869,405
10	Internet publishing and broadcasting and web search portals	\$0	\$2,651,580	\$1,023,183	\$3,674,763
	Total all other categories	\$0	\$63,781,734	\$42,225,545	\$106,007,277

Table A - 84: Total FTE Jobs from Upper Bound DCPP Decommissioning Expenditures, Rest of California (Annually for 10 years)

Rank	Description	Direct	Indirect	Induced	Total
	Total		0	505	358
1	Employment services	0	115	23	138
2	Management of companies and enterprises	0	26	9	36
3	Wholesale trade	0	20	10	31
4	Investigation and security services	0	16	5	22
5	Warehousing and storage	0	12	8	19
6	Real estate	0	7	12	19
7	Other financial investment activities	0	5	13	18
8	Legal services	0	13	6	18
9	Full-service restaurants	0	4	13	18
10	Truck transportation	0	12	4	16
	Total all other categories	0	274	254	528

Table A - 85: State and Local Tax Impact of Upper Bound DCPP Decommissioning Expenditures, Rest of California (Annually for 10 years)

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations
Dividends	\$0	\$0	\$0	\$0	\$19,154
Social Ins Tax- Employee Contribution	\$98,891	\$0	\$0	\$0	\$0
Social Ins Tax- Employer Contribution	\$207,146	\$0	\$0	\$0	\$0
TOPI: Sales Tax	\$0	\$0	\$2,364,273	\$0	\$0
TOPI: Property Tax	\$0	\$0	\$1,943,310	\$0	\$0
TOPI: Vehicle License	\$0	\$0	\$53,652	\$0	\$0
TOPI: Severance Tax	\$0	\$0	\$2,550	\$0	\$0
TOPI: Other Taxes	\$0	\$0	\$351,956	\$0	\$0
TOPI: S/L NonTaxes	\$0	\$0	\$66,896	\$0	\$0
Corporate Profits Tax	\$0	\$0	\$0	\$0	\$344,658
Personal Income Tax	\$0	\$0	\$0	\$1,896,285	\$0
Personal Tax: NonTaxes (Fines- Fees	\$0	\$0	\$0	\$312,695	\$0
Personal Tax: Vehicle Licenseense	\$0	\$0	\$0	\$64,980	\$0
Personal Tax: Property Taxes	\$0	\$0	\$0	\$22,830	\$0
Personal Tax: Other Tax (Fish/Hunt)	\$0	\$0	\$0	\$12,875	\$0
Total State and Local Tax	\$306,036	\$0	\$4,782,638	\$2,309,664	\$363,812

8.2 Specific Impact Estimates from Alternative Decommissioning Finance Scenarios

This sub-section presents impact decomposition results for three different decommissioning budget scenarios: Approved (\$2.7 billion), Requested (\$4.8 billion), and a hypothetical Upper Bound (\$6 billion) scenario. Here we look specifically at the decommissioning impact, not considering SB 1090 or closure.

8.2.1 Policy Impacts of Decommissioning Expenditures: Three Alternatives

Table A - 86: Annual Economic Impact of Approved DCPP Decommissioning Expenditures, San Luis Obispo County, (2016 Dollars Annually for 10 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	1711	\$95,268,571	\$269,678,326
Indirect Effect	513	\$23,452,729	\$67,617,041
Induced Effect	553	\$22,502,774	\$69,857,627
Total Effect	2778	\$141,224,072	\$407,152,994

Table A - 87: Annual Economic Impact of Approved DCPP Decommissioning Expenditures, Santa Barbara County, (2016 Dollars Annually for 10 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	54	\$3,382,093	\$9,312,845
Induced Effect	29	\$1,490,450	\$4,347,420
Total Effect	83	\$4,872,543	\$13,660,265

Table A - 88: Annual Economic Impact of Approved DCPP Decommissioning Expenditures, Rest of California (2016 Dollars Annually for 10 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	228	\$16,733,181	\$46,592,443
Induced Effect	161	\$9,820,970	\$27,488,485
Total Effect	389	\$26,554,151	\$74,080,928

Table A - 89: Annual Economic Impact of Requested DCPP Decommissioning Expenditures, San Luis Obispo County, (2016 Dollars Annually for 10 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	3,042	\$169,366,348	\$479,428,135
Indirect Effect	913	\$41,693,740	\$120,208,073
Induced Effect	983	\$40,004,932	\$124,191,337
Total Effect	4,938	\$251,065,018	\$723,827,545

Table A - 90: Annual Economic Impact of Requested DCPP Decommissioning Expenditures, Santa Barbara County, (2016 Dollars Annually for 10 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	96	\$6,012,610	\$16,556,170
Induced Effect	51	\$2,649,689	\$7,728,746
Total Effect	147	\$8,662,298	\$24,284,916

Table A - 91: Annual Economic Impact of Requested DCPP Decommissioning Expenditures, Rest of California (2016 Dollars Annually for 10 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	404	\$29,747,878	\$82,831,010
Induced Effect	286	\$17,459,502	\$48,868,417
Total Effect	691	\$47,207,380	\$131,699,428

Table A - 92: Annual Economic Impact of Upper Bound DCPP Decommissioning Expenditures, San Luis Obispo County, (2016 Dollars Annually for 10 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	3,802	\$211,707,935	\$599,285,169
Indirect Effect	1,141	\$52,117,175	\$150,260,091
Induced Effect	1,229	\$50,006,165	\$155,239,172
Total Effect	6,173	\$313,831,272	\$904,784,432

Table A - 93: Annual Economic Impact of Upper Bound DCPP Decommissioning Expenditures, Santa Barbara County, (2016 Dollars Annually for 10 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	119	\$7,515,762	\$20,695,212
Induced Effect	64	\$3,312,111	\$9,660,933
Total Effect	183	\$10,827,873	\$30,356,145

Table A - 94: Annual Economic Impact of Upper Bound DCPP Decommissioning Expenditures, Rest of California (2016 Dollars Annually for 10 Years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	505	\$37,184,847	\$103,538,763
Induced Effect	358	\$21,824,378	\$61,085,522
Total Effect	863	\$59,009,225	\$164,624,285

8.3 Net Impacts of DCPP Closure, SB 1090, and Decommissioning Under Three Budget Scenarios

This final set of tables consolidates all components of the impact assessment for each decommissioning budget scenario: Net Impacts of Requested Decommissioning Expenditures

Table A - 95: Net Annual Economic Impact of DCPP Closure with Requested Decommissioning Expenditures, San Luis Obispo County, (2016 Dollars Annually for 10 years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	1,646	-\$56,810,617	-\$121,440,277
Indirect Effect	460	\$21,567,039	\$54,126,942
Induced Effect	-76	-\$3,138,360	-\$9,677,013
Total Effect	2,030	-\$38,381,939	-\$76,990,348

Table A - 96: Net Annual Economic Impact of DCPP Closure with Requested Decommissioning Expenditures, Santa Barbara County, (2016 Dollars Annually for 10 years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	82	\$5,027,960	\$13,973,808
Induced Effect	-83	-\$4,118,519	-\$11,670,337
Total Effect	-1	\$909,440	\$2,303,471

Table A - 97: Net Annual Economic Impact of DCPP Closure with Requested Decommissioning Expenditures, Rest of California, (2016 Dollars Annually for 10 years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	358	\$26,277,475	\$73,786,852
Induced Effect	124	\$6,572,130	\$19,457,409
Total Effect	483	\$32,849,605	\$93,244,262

Table A - 98: Net Annual Economic Impact of DCPP Closure with Approved Decommissioning Expenditures, San Luis Obispo County, (2016 Dollars Annually for 10 years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	315	-\$130,908,394	-\$331,190,086
Indirect Effect	61	\$3,326,028	\$1,535,910
Induced Effect	-506	-\$20,640,518	-\$64,010,723
Total Effect	-130	-\$148,222,885	-\$393,664,899

Table A - 99: Net Annual Economic Impact of DCPP Closure with Approved Decommissioning Expenditures, Santa Barbara County, (2016 Dollars Annually for 10 years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0.00	\$0	\$0
Indirect Effect	41	\$2,397,443	\$6,730,483
Induced Effect	-105	-\$5,277,758	-\$15,051,663
Total Effect	-65	-\$2,880,315	-\$8,321,180

Table A - 100: Net Annual Economic Impact of DCPP Closure with Approved Decommissioning Expenditures, Rest of California, (2016 Dollars Annually for 10 years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0.00	\$0	\$0
Indirect Effect	181	\$13,262,778	\$37,548,285
Induced Effect	-1	-\$1,066,402	-\$1,922,523
Total Effect	181	\$12,196,376	\$35,625,762

8.3.1 Net Impacts of Upper Bound Decommissioning Expenditures

Table A - 101: Net Annual Economic Impact of DCPP Closure with Upper Bound Decommissioning Expenditures, San Luis Obispo County, (2016 Dollars Annually for 10 years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	2,406	-\$14,469,030	-\$1,583,243
Indirect Effect	688	\$31,990,474	\$84,178,960
Induced Effect	17	\$6,862,873	\$21,370,822
Total Effect	3,265	\$24,384,315	\$103,966,539

Table A - 102: Net Annual Economic Impact of DCPP Closure with Upper Bound Decommissioning Expenditures, Santa Barbara County, (2016 Dollars Annually for 10 years)

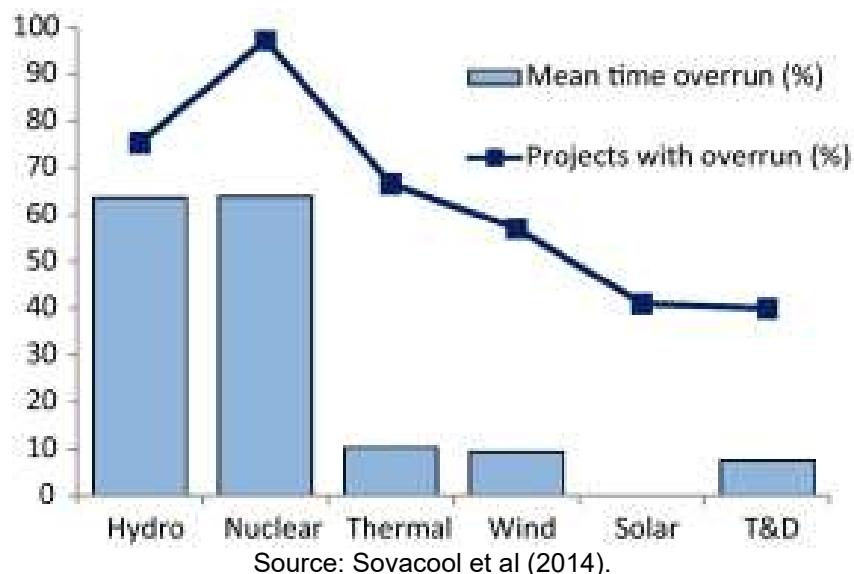
Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	106	\$6,531,112	\$18,112,850
Induced Effect	-70	-\$3,456,097	-\$9,738,150
Total Effect	36	\$3,075,015	\$8,374,700

Table A - 103: Net Annual Economic Impact of DCPP Closure with Upper Bound Decommissioning Expenditures, Rest of California, (2016 Dollars Annually for 10 years)

Impact Type	Employment (FTE Jobs)	Labor Income	Output
Direct Effect	0	\$0	\$0
Indirect Effect	459	\$33,714,444	\$94,494,605
Induced Effect	196	\$10,937,006	\$31,674,514
Total Effect	655	\$44,651,450	\$126,169,119

It can be noted that the Upper Bound case results in net stimulus for the overall SLO economy. This scenario would be analogous to a 25% cost overrun on the decommissioning project. Research on this issue suggests that overruns are endemic to electric power infrastructure development and management. In a survey of 180 nuclear reactor construction projects, for example, finds that 100% were over budget by an average of 117% (Figure 31 and Table A - 104). Of course, decommissioning differs in many ways from construction, but perhaps less so by these metrics.

Figure 31: Mean Time Overruns and Percentage of Projects with a Cost Overrun for Electricity Infrastructure by Energy Source



Source: Sovacool et al (2014).

Table A - 104: Mean Cost Escalation for Various Infrastructure Projects

Technology	Mean Cost Escalation (%)	(n) for the Sample
Nuclear reactors	117	180
Hydroelectric dams	71	61
Railway networks	45	58
Bridges and tunnels	34	33
Roads	20	167
Mining projects	14	63
Thermal power plants	13	36
Wind farms	8	35
Transmission projects	8	50
Solar farms	1	39

Source: Data for electricity infrastructure comes from this study. Data for other items come from ([Flyvbjerg et al., 2002, 2004](#)).